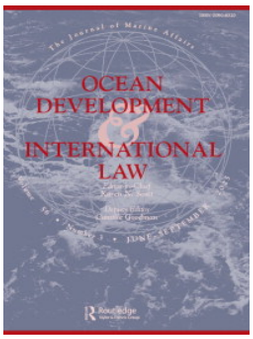

Ocean Development & International Law

ISSN: 0090-8320 (Print) 1521-0642 (Online) Journal homepage: www.tandfonline.com/journals/uodl20

Reconciling Marine Conservation with Offshore Wind Parks

Niels Krabbe & Gabriela Argüello

To cite this article: Niels Krabbe & Gabriela Argüello (08 Dec 2025): Reconciling Marine Conservation with Offshore Wind Parks, Ocean Development & International Law, DOI: 10.1080/00908320.2025.2591683

To link to this article: https://doi.org/10.1080/00908320.2025.2591683

OCEAN DEVELOPMENT & INTERNATIONAL LAW
https://doi.org/10.1080/00908320.2025.2591683

Taylor & Francis
Taylor & Francis Group

Reconciling Marine Conservation with Offshore Wind Parks

Niels Krabbe[a,b] and Gabriela Argüello[a]

[a]School of Business, Economics and Law, University of Gothenburg, Gothenburg, Sweden; [b]School of Law, Faculty of Human and Social Sciences, Åbo Akademi University, Turku, Finland

ABSTRACT

Baltic states have ambitious plans to increase their offshore wind capacity in an already crowded marine space to meet climate mitigation targets. Simultaneously, this region has committed to protect, by 2030, at least 30 percent of its marine environment through marine protected areas (MPAs) and other effective conservation measures (OECMs). Achieving this conservation goal will increase spatial demands at sea, potentially leading to overlaps between protected areas and offshore wind development sites. Where the deployment of large-scale wind parks conflicts with conservation objectives, tensions may arise, presenting a dilemma of prioritizing either climate or biodiversity. However, recent ecological research suggests that there may be potential synergistic effects between offshore wind infrastructure and marine ecosystems. Offshore wind structures can generate both anthropogenic disturbances and ecological benefits, making their coexistence with conservation measures a complex but feasible objective.

To reduce conflicts, this article explores legal pathways to promote coexistence between offshore wind power and MPAs. Additionally, evidence indicates that offshore wind parks can, under certain conditions, enhance biodiversity through artificial reef effects, acoustic management, and the incidental exclusion of other disruptive activities such as trawling or intensive shipping. In this regard, offshore wind parks can be categorized as OECMs. This article explores how, in light of recent policy developments, careful planning of offshore wind with biodiversity considerations can facilitate co-location with MPAs or even classify them as OECMs. Fostering coexistence at sea aligns with international and European Union law, aiming to minimize emerging spatial conflicts in maritime areas.

ARTICLE HISTORY
Received 8 May 2025
Accepted 13 November 2025

KEYWORDS
conflicts at sea; coexistence; MPAs; offshore wind parks; OECMs

Introduction

As states increase the development of offshore wind energy and area-based conservation measures, there is an increasing risk of tension in areas where these interests overlap. By "tension," we refer to a growing competition for marine space, regulatory friction between sectoral regimes, and ecological trade-offs between biodiversity protection and electricity generation. These tensions manifest both spatially, where marine protected

CONTACT Niels Krabbe niels.krabbe@law.gu.se Box 650, 40530 Göteborg, Sweden.

areas (MPAs) overlap with planned wind parks, and institutionally, through fragmented governance frameworks and differing sectoral priorities. This article assesses how the legal framework supports or hinders coexistence between offshore wind power on the one hand and MPAs and other effective conservation measures (OECMs) on the other.

This problem is particularly relevant in the context of the Baltic Sea, where the fragile ecosystem is already under pressure from the impact of human activities, yet the demand for maritime space continues to increase. According to the Third Holistic Assessment by the Baltic Marine Environment Protection Commission (Helsinki Commission or HELCOM), the overall condition of the Baltic Sea has yet to show any significant improvement.[1] While the values of fisheries landings and the gross weight of goods handled largely remain stable, installed offshore wind capacity has increased dramatically, particularly in the southern part of the Baltic Sea.[2]

To counteract biodiversity loss and improve the conservation of ecosystem services, the European Union (EU) and HELCOM have actively promoted the implementation of area-based management tools, such as MPAs[3] and OECMs. These conservation tools have found support in scientific research and are central to preserving local and regional biodiversity, as well as enhancing the resilience of marine ecosystems to climate change.[4] Their effectiveness depends on management measures, enforcement, and ecological connectivity.

Overall, MPAs have gained increasing support in law and policy as a tool to preserve species and marine ecosystems by imposing stricter environmental standards and regulating human activities more rigorously than in surrounding areas.[5] Following international political objectives delineated in the Global Biodiversity Framework, the EU and HELCOM have set ambitious objectives to establish MPAs that cover at least 30 percent of the marine environment by 2030, also known as the 30-by-30 target.[6] This objective can be further implemented by designating OECMs.[7] Although not necessarily focused on conservation, OECMs contribute incidentally to the protection of marine biodiversity and ecosystems.[8] This goal also builds upon Decision 14/8 adopted by the Conference of the Parties (COP) to the Convention on Biological Diversity (CBD), which also recognizes OECMs as complementary instruments to

[1] HELCOM, *State of the Baltic Sea 2023: Third HELCOM Holistic Assessment 2016–2021* (2023), 6.

[2] Ibid, 35–36.

[3] On the legality of MPAs, see James Harrison, *Saving the Oceans through Law: The International Legal Framework for the Protection of the Marine Environment* (Oxford University Press, 2017), chapter 3; Tullio Scovazzi, "Marine Protected Areas on the High Seas: Some Legal and Policy Considerations" (2004) 19(1) *International Journal of Marine and Coastal Law* 1; Anna von Rebay, *The Designation of Marine Protected Areas: A Legal Obligation* (Springer, 2023).

[4] Enric Sala, Juan Mayorga, Darcy Bradley et al., "Protecting the Global Ocean for Biodiversity, Food and Climate" (2021) 592 *Nature* 397, 398.

[5] Yoshifumi Tanaka, *The International Law of the Sea* (4th ed) (Cambridge University Press, 2023), 454–464.

[6] European Commission, *EU Biodiversity Strategy for 2030: Bringing Nature Back Into Our Lives*, COM(2020) 380 final (20 May 2020), 4–6, 14; European Environment Agency, *8th Environment Action Programme: Designated Marine Protected Areas in Europe's Seas* (6 March 2023); CBD, Decision 15/4, *Kunming-Montreal Global Biodiversity Framework*, CBD/COP/DEC/15/4 (2022).

[7] European Commission, ibid, 5.

[8] HELCOM, Outcome of the Webinar and Workshop on OECMs, *2J—Matters of relevance for the Meeting and information from the Secretariat* (2022), 16–17.

designated MPAs.[9] OECMs, however, remain conceptually fluid and unevenly defined. A distinction must therefore be made between formally recognized OECMs under international law and de facto conservation zones, such as exclusion areas around offshore wind parks, for which the ecological performance is still uncertain.

However, not only have the EU and other Baltic states undertaken to reserve considerable marine areas for nature conservation, but in parallel, energy production objectives have increasingly focused on offshore climate technologies, particularly large-scale wind power. In the EU, the current installed capacity of offshore wind power stands at 17.6 gigawatts (GW).[10] The goal set in the EU Offshore Energy Strategy is to increase this capacity to 88 GW by 2030, reaching 360 GW by 2050.[11] The space allocated for such expansion, according to the voluntary pledges of 10 EU member states, is 43,462 km^2. In the Baltic Sea, states have also committed to increase their offshore generation capacity from the existing 3.1 GW to "26.7 GW by 2030, 45 GW by 2040 and 70 GW by 2050."[12] Among the extensive areas designated for offshore wind deployment, some overlap with MPAs.[13] Within the EU, comprehensive data on the extent of spatial overlap between planned offshore wind developments and MPAs remain limited. Nevertheless, as the EU pursues its 30-by-30 conservation target, such overlaps are likely to increase in the coming years.

The establishment of offshore wind installations can incidentally displace other uses such as fisheries and shipping. Assessing how law addresses such conflicts is relevant, particularly in intensely used confined sea areas, such as the Baltic.[14] The relationship between area-based conservation measures and offshore wind is particularly compelling, as both are linked to environmental objectives: biodiversity protection and clean energy production.

A potential spatial overlap between protected areas and offshore wind farms raises important questions as to whether the legal framework supports or hinders their coexistence. Recent scientific findings show that the two uses may be potentially complementary. Offshore wind structures may function as an effective biodiversity conservation tool.[15] These positive environmental effects are also relevant in relation

[9] Convention on Biological Diversity (CBD), Decision 14/8, *Protected Areas and Other Effective Area-Based Conservation Measures*, CBD/COP/DEC/14/8 (2018), 10.

[10] Antonio Borriello, Ángel Calvo Santos, Laia Codina López et al., *The EU Blue Economy Report 2024* (Publications Office of the European Union, 2024) at https://data.europa.eu/doi/10.2771/186064 (accessed 21 October 2025).

[11] European Commission, "Member States Agree New Ambition for Expanding Offshore Renewable Energy" at https://energy.ec.europa.eu/news/member-states-agree-new-ambition-expanding-offshore-renewable-energy-2024-12-18 (accessed 21 October 2025); see also WindEurope, *Wind Energy in Europe: 2024 Statistics and the Outlook for 2025–2030* (2025) at https://windeurope.org/data/products/wind-energy-in-europe-2024-statistics-and-the-outlook-for-2025-2030/(accessed 21 October 2025); Directive (EU) 2023/2413 of 18 October 2023 as regards the promotion of energy from renewable sources, OJ L 2413, 31 October 2023, Preamble, 14th Recital (hereinafter, Renewable Energy Directive, RED III).

[12] The Baltic Sea—High Level Energy Security Meeting, The Declaration of Energy Ministers (10 April 2024), 3.

[13] World Wild Fund for Nature (WWF), *New Horizons: The Space Needed for Offshore Wind Energy in the EU by 2030 and 2040* (2024).

[14] There are, however, attempts to enable the co-location of fisheries and offshore wind farms. See, for example, Prince Owusu Bonsu, Jonas Letschert, Katherine L. Yates et al., "Co-location of Fisheries and Offshore Wind Farms: Current Practices and Enabling Conditions in the North Sea" (2024) 129 (105941) *Marine Policy* 1, 1–11.

[15] Juan Carlos Farias Pardo, Aune Magnus, Christopher Harman et al., "A Synthesis Review of Nature Positive Approaches and Coexistence in the Offshore Wind Industry" (2023) *ICES Journal of Marine Science* 1, 9–10.

to legal and policy objectives on MPAs and OECMs. However, when the development of offshore wind parks has negative impacts on the marine environment, the balance between prioritizing clean energy and protecting marine biodiversity remains unclear.

From a policy perspective, promoting coexistence has become a priority to minimize conflicting interests in marine spaces, and calls for prioritization and effective marine spatial planning.[16] But even where processes are set up to promote coexistence, many states are likely to find that marine spaces are too constrained to fully deliver on both objectives. Taking into account this background, the relationship between MPAs and offshore wind is discussed from a legal perspective, focusing on the Baltic Sea. Particularly, the compatibility of offshore wind development with the conservation goals of MPAs established under the auspices of HELCOM, which largely overlap with MPAs established under EU legislation, known as Nature 2000, is assessed.[17] Additionally, whether offshore wind parks can be recognized as OECMs is explored.

Overall, this article highlights the legal challenges associated with expanding renewable energy infrastructure, particularly in balancing climate action with marine environmental protection and addressing potential conflicts from competing uses of the marine space. In light of recent policy developments, how offshore wind power, if planned with biodiversity in mind, could not only avoid hindering the objectives of MPAs and OECM but potentially contribute to them is examined.

The article is structured as follows. First, MPAs and OECMs are defined and their potential for coexistence is explored. Biodiversity benefits and associated environmental impacts related to offshore wind structures are summarized. This is followed by an exploration of the legal preconditions for coexistence at international and EU levels. Notably, there is no legal prohibition concerning the coexistence of offshore wind parks and MPAs or OECMs. The legal mechanisms to balance interests at sea, including due regard obligations, are explained. With an emphasis on the Baltic Sea, the policy and legal developments concerning MPAs and OECMs and their potential compatibility with offshore wind parks are discussed. How licensing procedures can maximize the coexistence potential between conservation measures and offshore wind parks is also reviewed. The final section is dedicated to conclusions.

Defining MPAs and OECMs: Is There a Potential for Coexistence?

MPAs are not explicitly provided for in the United Nations Convention on the Law of the Sea (UNCLOS).[18] However, the lack of specific rules does not mean that establishing MPAs lacks a legal basis. Under Article 192, all states have the obligation to protect the marine environment as a whole and Article 194(5) imposes an obligation

[16] Frank Maes, "The International Legal Framework for Marine Spatial Planning" (2008) 32(5) *Marine Policy* 797, 798.

[17] Natura 2000 protected areas are implemented under two legal acts: Directive 2009/147/EC on the conservation of wild birds, OJ L 20/7, 26 January 2010 [hereinafter, Birds Directive]; and Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L 206/7 (22 July 1992) [hereinafter, Habitats Directive].

[18] United Nations Convention on the Law of the Sea, adopted 10 December 1982, entered into force 16 November 1994, 1833 UNTS 397 [hereinafter, UNCLOS].

to "protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life." In the *Chagos Marine Protected Area Arbitration*, the tribunal concluded that states' obligations extend beyond pollution control to include broader measures for marine ecosystem conservation, affirming that MPA conservation efforts can be comprehensive.[19] Additionally, the tribunal also explained that states are bound to act in good faith and in consultation with affected states, reflecting a procedural duty to cooperate when spatial rights overlap.[20] This consultative dimension is highly relevant for coexistence regimes involving offshore wind and conservation areas, which require cross-sectoral coordination rather than unilateral zoning.

While MPAs can incorporate comprehensive conservation measures, they are not necessarily synonymous with a total prohibition of human activities, and coexistence between MPAs and other human activities is legally possible. Empirical evidence from the North Sea indicates that offshore wind structures can maintain or even enhance biodiversity indicators, including the recovery of benthic habitats and a reduction in trawling intensity.[21]

MPAs are area-based conservation tools that lack a single legal definition and were mainstreamed into the law of the sea owing to the efforts of the 2004 COP to the CBD,[22] which defined MPAs as

> any defined area … which has been reserved by legislation or other effective means, including custom, with the effect that its marine and/or coastal biodiversity enjoys a higher level of protection that is surrounding.[23]

This higher level of protection may require the implementation of stricter regulations on human activities within the designated area and even potentially imposing restrictions on specific uses. Some MPAs are sectoral, as they regulate one human activity such as mining, fisheries, tourism or shipping. Others are multisectoral, managing two or more activities, while cross-sectoral MPAs oversee all human activities to achieve defined biodiversity conservation objectives. The extent of the measures will depend on the authority establishing an MPA (e.g., a coastal state, regional, or international organization), their competence, and the maritime zone. Many sectoral MPAs have been adopted under the auspices of regional and international organizations, including vulnerable marine ecosystems (VMEs), identified by the Food and Agriculture Organization of the United Nations (FAO) as areas that may later require fishing conservation measures or particularly sensitive sea areas (PSSA) designated through the International Maritime Organization (IMO) with associated shipping measures.

[19] *Chagos Marine Protected Area Arbitration (Mauritius v. United Kingdom)* (Award), Permanent Court of Arbitration 2015, XXXI RIAA 359, [538] [hereinafter, *Chagos Marine Protected Area Arbitration*].

[20] Ibid, [534]–[535].

[21] Steven Degraer, Drew Carey, Coolen Joop et al., "Offshore Wind Farm Artificial Reefs Affect Ecosystems Structure and Functioning: A Synthesis" (2020) 33(4) *Oceanography* 48, 52–53; see also Andrew Gill, Steven Degraer, Andrew Lipsky et al., "Setting the Context for Offshore Wind Development Effects on Fish and Fisheries" (2020) 33(4) *Oceanography* 119, 120.

[22] Harrison, note 3, 51.

[23] CBD, Decision VII/5, *Marine and Coastal Biological Diversity*, UNEP/CBD/COP/DEC/VII/5 (2004), footnote 1.

The International Seabed Authority (ISA) has broad authority to protect the deep-sea environment from the harmful effects of deep seabed mining.[24] Consequently, the ISA has also designated MPAs, known as areas of particular environmental interest (APEIs).

In the territorial sea, where the coastal state exercises sovereignty, it has broad discretion to establish MPAs, whether sectoral, multisectoral, or cross-sectoral. The measures implemented within these areas can be comprehensive, provided they do not hamper the right of innocent passage.[25] In the exclusive economic zone (EEZ), while the coastal state has jurisdiction with regard to the protection and preservation of the marine environment as prescribed in Article 56(1)(b)(iii) of UNCLOS, it lacks territorial sovereignty over this zone. This means that coastal states have a clear obligation to exercise due regard for the rights of other states, including freedoms such as navigation, the laying of submarine cables and pipelines, and other lawful uses of the sea.[26]

In the *Chagos Marine Protected Area Arbitration*[27] the tribunal argued that establishing an MPA in the EEZ that could impair the rights of third states involves an obligation of consultation with the rights-holding state. The tribunal also found that due regard "does not impose a uniform obligation to avoid any impairment of … rights."[28] This nuanced understanding confirms that coexistence depends on procedural balance rather than strict prohibition. Such an interpretation aligns with EU practice, where environmental impact assessments (EIAs) and cross-sectoral marine spatial planning processes function as mechanisms of due regard and consultation.[29] Overall, a balance of interests may result in promoting coexistence when the proposed human uses, such as the construction of offshore wind parks, are compatible with the conservation objectives of an MPA.

Nonetheless, coexistence is not without ecological cost. Offshore wind structures may disturb ecological baselines through acoustic pollution, sediment resuspension, and the facilitation of non-native species via artificial substrates[30] Consequently, the legitimacy of permitting activities within MPAs depends on cumulative impact assessments and adaptive management measures that ensure no net loss of biodiversity function.[31] Figure 1 illustrates the different types of MPAs and their *ab initio* coexistence potential.

[24] UNCLOS, Art 145. On the environmental jurisdiction of the International Seabed Authority, see David Johnson and Maria Adelaide Ferreira, "ISA Areas of Particular Environmental Interest in the Clarion-Clipperton Fracture Zone" (2015) 30(3) *International Journal of Marine and Coastal Law* 559.

[25] UNCLOS, Art 24; see also Robin Churchill, A. Vaughan Lowe and Amy Sander, *The Law of the Sea* (4th ed) (Manchester University Press, 2022), 743.

[26] UNCLOS, Art 58.

[27] *Chagos Marine Protected Area Arbitration*, note 19, [322].

[28] Ibid, [519].

[29] European Commission, *Guidance Document on Wind Energy Developments and EU Nature Legislation* (Publications Office of the European Union, 2020), 95.

[30] Richard Inger, Martin Attrill, Stuart Bearhop et al., "Marine Renewable Energy: Potential Benefits to Biodiversity? An Urgent Call for Research" (2009) 46(6) *Journal of Applied Ecology* 1145, 1146–1148; Olivia Langhamer, "Artificial Reef Effect in Relation to Offshore Renewable Energy Conversion: State of the Art" (2012) 2012(386713) *Scientific World Journal* 1.

[31] European Commission, note 29, 95.

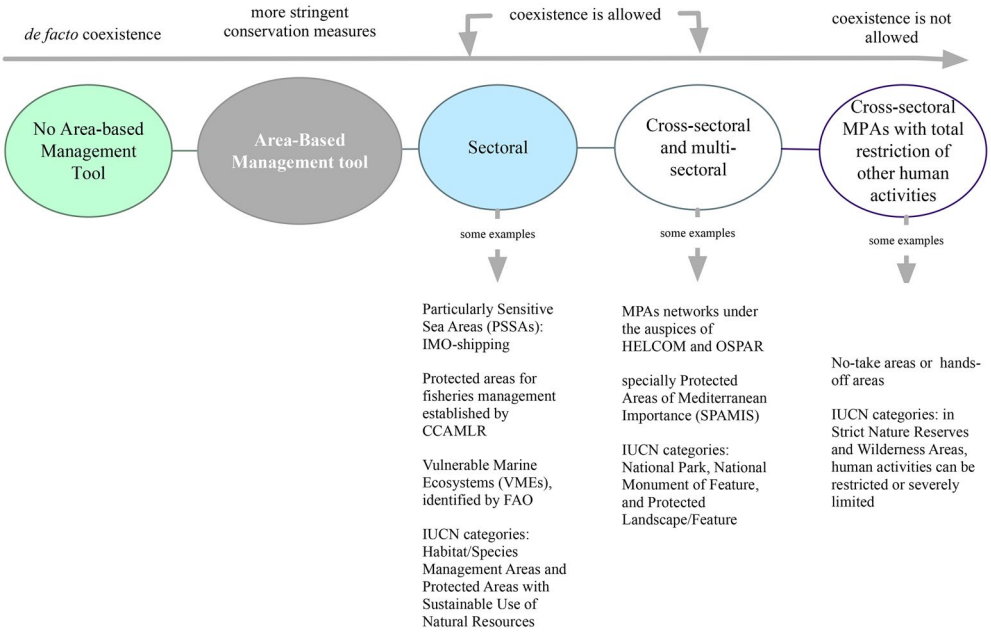

Figure 1. A spectrum of MPAs, highlighting varying degrees of coexistence between human activities and marine conservation. These range from no management to strict protection, with intermediate approaches like sectoral and cross-sectoral management. Figure created by the authors.

Similar to MPAs, there is no universally accepted legal definition of OECMs. While the primary goal of MPAs is the protection of biodiversity and marine ecosystems, OECMs represent a broader concept developed under the auspices of the COP of the CBD. This area-based management tool was included in the 2010 Aichi Biodiversity Target 11 without a definition or an explanation of how these measures differ from MPAs.[32] In 2018, the COP to the CBD defined an OECM as

> [a] geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values.[33]

In 2019, the International Union for Conservation of Nature (IUCN) recognized that offshore wind farms and other installations and structures that incidentally contribute to the protection of biodiversity, by displacing shipping or fisheries, could be categorized as OECMs.[34] The rationale is that while the primary purpose of an OECM may

[32] CBD, Decision X/2, *The Strategic Plan for Biodiversity 2011–2020 and the Aichi Biodiversity Targets*, UNEP/CBD/COP/DEC/X (2010); Karen N. Scott, "Unconventional Lawmaking in the Law of the Sea and Area-Based Conservation Measures" in Natalie Klein (ed), *Unconventional Lawmaking in the Law of the Sea: Current Practice and Future Prospects* (Oxford University Press, 2022), 309.

[33] CBD Decision 14/8, note 9.

[34] Jon Day, Nigel Dudley, Marc Hockings et al., *Guidelines for Applying the IUCN Protected Area Management Categories to Marine Protected Areas* (2nd ed) (IUCN, 2019), 11.

not be the protection and preservation of the marine environment, these structures nonetheless contribute to conservation objectives. However, this functional interpretation remains contested. Scholars caution that without standardized ecological indicators, OECMs risk becoming instruments of greenwashing that symbolically expand protected area statistics without ensuring genuine biodiversity gains.[35] Governance quality, monitoring regimes, and long-term ecological performance must therefore be integral to any recognition of offshore wind parks as OECMs.

Environmental Effects of Offshore Wind Structures and Installations

Neither international nor EU law prohibits the coexistence of offshore wind parks with MPAs.[36] The compatibility of large-scale offshore wind structures with the conservation objectives of an MPA depends on the level of protection in place. As Churchill, Lowe and Sander note, "the degree to which human activities are permitted within an MPA may vary considerably."[37] However, even if coexistence is legally possible, concerns remain, as some evidence suggests resistance to offshore wind development owing to its potential negative impact on the marine environment.[38] Importantly, legal permissibility under UNCLOS and EU law must also encompass ecological compatibility.

To evaluate the compatibility of offshore wind farms with environmental conservation measures, it is essential to understand their positive and negative impacts on marine ecosystems. These impacts should be assessed across the entire lifecycle of a wind farm, including construction, operation, maintenance, and decommissioning. Given the high anthropogenic load in the Baltic Sea, cumulative analyses are indispensable. The assessment of cumulative and synergetic effects in the marine environment is an obligation established in Article 8(1)(b)(ii) of the EU Marine Strategy Framework Directive.[39]

Positive Effects

During the operation of offshore wind parks, positive effects have been documented. These impacts can be categorized into preventive and physical. Preventive effects are the results of maritime safety measures associated with offshore wind farms. Safety of

[35] According to Maxwell et al., "[t]he challenge now for the conservation community is to ensure that OECMs contribute meaningfully to biodiversity conservation." Sean Maxwell, Victor Cazalis, Nigel Dudley et al., "Area-Based Conservation in the Twenty-First Century" (2020) 586(7828) *Nature* 217, 223; see also Helena Alves-Pinto, Jonas Geldmann, Harry Jonas et al., "Opportunities and Challenges of Other Effective Area-Based Conservation Measures (OECMs) for Biodiversity Conservation" (2021) 19(2) *Perspectives in Ecology and Conservation* 19115, 116.

[36] von Rebay, note 3, chapters 6 and 7; Tullio Scovazzi, "The Global Legal Basis for Marine Area-Based Conservation" in Mitja Grbec, Tullio Scovazzi and Ilaria Tani (eds), *Legal Aspects of Marine Protected Areas in the Mediterranean Sea: An Adriatic and Ionian Perspective* (Routledge, 2023), 24, 25.

[37] Churchill, Lowe and Sander, note 25, 742.

[38] Zacharoula Kyriazi, Frank Maes and Steven Degraer, "Coexistence Dilemmas in European Marine Spatial Planning Practices: The Case of Marine Renewables and Marine Protected Areas" (2016) 97 *Energy Policy* 391, 391.

[39] 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), OJ L 164/19, 25 June 2008.

navigation, often supported by rules on safety zones, may prevent ships from navigating near offshore wind sites. For example, in the EEZ, where most offshore wind development in the Baltic Sea occurs, safety zones are available protective measures to maintain the physical integrity of offshore installations. Around each installation, coastal states have the discretionary power to establish "reasonable" safety zones that must not exceed a distance of 500 meters, as prescribed in Article 60(4)–(7) of UNCLOS. The legislative jurisdiction in safety zones, according to Article 60(4), is limited to measures to ensure the safety of navigation and the offshore installation.

Maritime safety requirements could effectively block two of the most important environmental pressures in a Baltic Sea context.[40] By forcing shipping to take alternative routes, localized impacts from maritime traffic, including emissions, discharge of noxious substances, ballast-water introductions, and underwater noise, may be mitigated. However, empirical confirmation remains limited. Consequently, any assumed biodiversity gain from shipping exclusion should be assessed on a case-by-case approach.

Limiting access of ships within offshore wind parks also has direct implications for fisheries. While there are examples of co-location that enable fisheries to be in proximity to installations, the level of success has been low and fisheries are generally characterized as mostly incompatible with large-scale offshore wind projects.[41] In most cases, offshore wind farms tend to displace fisheries, promoting the conservation of fish and benthic fauna, which otherwise would be negatively affected by trawlers.[42] According to Gill et al., the intentional or incidental displacement of fisheries in practice transforms offshore wind farms into no-take zones.[43] These effects may be particularly relevant since the same banks that are associated with fish abundance are often prioritized for offshore wind development.[44] Owing to their relatively shallow depths, installation costs are reduced while good wind conditions are prevalent in such areas.[45] However, abundance gains should not automatically be equated with improved ecosystem function: Increased biomass may reflect proliferation of opportunistic or non-target species.[46]

Physical effects come from structures and installations functioning as artificial reefs. This means that offshore structures add new hard substrates for the colonization of marine species that use these as nursery areas. The result is an increase in biological

[40] HELCOM, note 1.

[41] Bonsu et al., note 14, 7; G. Van Hoey, F. Bastardie, S. Birchenough et al., *Overview of the Effects of Offshore Wind Farms on Fisheries and Aquaculture* (Publications Office of the European Union, 2021), 71; Gill et al., note 21 119.

[42] C. L. Szostek, S. C. L. Watson, N. Trifonova et al., "Spatial Conflict in Offshore Wind Farms: Challenges and Solutions for the Commercial Fishing Industry" (2025) 200(114555) *Energy Policy* 1, 6; Stephen Watson, Paul J. Somerfield, Anaëlle J. Lemasson et al., "The Global Impact of Offshore Wind Farms on Ecosystem Services" (2024) 249(107023) *Ocean and Coastal Management* 1, 9; Matthew Ashley, Melanie Austen, Lynda Rodwell et al., "Co-Locating Offshore Wind Farms and Marine Protected Areas: A United Kingdom Perspective" in Katherine Yates and Corey Bradshaw (eds), *Offshore Energy and Marine Spatial Planning* (Routledge, 2018), 251.

[43] Gill et al., note 21, 118.

[44] Eugen Rusu, "An Evaluation of the Wind Energy Dynamics in the Baltic Sea, Past and Future Projections" (2020) 160 *Renewable Energy* 350.

[45] Lena Bergström, Lena Kautsky, Torleif Malm et al., *The Effects of Wind Power on Marine Life: A Synthesis*, Swedish Environmental Protection Agency Report 6512 (October 2012).

[46] Degraer et al., note 21, 52.

diversity and the density of specific species.[47] While some studies indicate that the density of pelagic species remains largely unaffected by the installation of offshore structures,[48] others suggest fisheries restrictions or no-take zones resulting from offshore wind increase populations and result in a positive spillover effect into neighboring areas. Where passive fisheries methods are allowed within offshore wind parks, the reef effect may benefit crustacean fisheries.[49]

Negative Effects

Scientific evidence is increasingly reporting positive biological effects arising from the establishment of offshore wind structures, but there is also evidence about adverse environmental effects. If deployed at large scale, offshore wind structures may "affect fish (re)production, migration, and/or distribution."[50] The rapid expansion of offshore wind farms could lead to habitat loss, with birds and macroinvertebrates being the most affected.[51]

From a spatiotemporal perspective, the construction, maintenance, and decommissioning of offshore structures cause "underwater noise, dredging vibration and pile driving" and during the wind farm operation, "underwater noise, electromagnetic fields, change in light condition" are some of the reported impacts. Additionally, non-native species may be introduced.[52] Some evidence also points to changes in the seabed and marine habitats during the construction and decommissioning phases and allision risks with offshore structures for both birds and marine species.[53]

In conclusion, while it is challenging to establish that offshore wind structures consistently have net positive outcomes for biodiversity objectives, evidence supports context-dependent ecological trade-offs. Furthermore, these benefits can be enhanced by actively considering biodiversity impacts throughout the phases of installation, operation and dismantlement. A synthesis study considers that more research needs to be carried out to assess if the net positive conservation effects of offshore wind are sufficient to make the case that offshore wind sites could be referenced as MPAs or OECMs.[54]

[47] Maria Glarou, Martina Zrust and Jon C. Svendsen, "Using Artificial-Reef Knowledge to Enhance the Ecological Function of Offshore Wind Turbine Foundations: Implications for Fish Abundance and Diversity" (2020) 8(332) *Journal of Marine Science and Engineering* 1, 2; Langhamer, note 30, 6.

[48] Glarou, Zrust and Svendsen, note 47, 10; R. van Hal, A. B. Griffioen and O. A. van Keeken, "Changes in Fish Communities on a Small Spatial Scale, an Effect of Increased Habitat Complexity by an Offshore Wind Farm" (2017) 126 *Marine Environmental Research* 26, 30.

[49] Gill et al., note 21, 119.

[50] Ibid, 119.

[51] Watson et al., note 42, 4.

[52] Robin Pelc and Rod Fujita, "Renewable Energy from the Ocean" (2002) 26 *Marine Policy*, 471, 473–475; Elina A. Virtanen, Juho Lappalainen, Marco Nurmi et al., "Balancing Profitability of Energy Production, Societal Impacts and Biodiversity in Offshore Wind Farm Design" (2022) 158(112087) *Renewable and Sustainable Energy Reviews* 1, 2.

[53] Anthony Fox and Krag Petersen, "Offshore Wind Farms and their Effects on Birds" (2019) 113 *Dansk Ornitologisk Forenings Tidsskrift* 86, 92; Natalia Cieślewicz, Krzysztof Pilarski and Agnieszka Anna Pilarska, "Impact of Offshore Wind Farms on the Fauna of the Baltic Sea" (2025) 26(4) *Journal of Ecological Engineering* 1, 7–11.

[54] Matthew C. Ashley, Stephen C. Mangi and Lynda D. Rodwell, "The Potential of Offshore Windfarms to Act as Marine Protected Areas—A Systematic Review of Current Evidence" (2014) 45 *Marine Policy* 301, 307–308.

Law of the Sea and *De Facto* Coexistence

Coexistence is not a term included in UNCLOS, yet this is not an extraneous phenomenon in the law of the sea. As marine uses and protection measures multiply, so does the competition for space. UNCLOS implicitly anticipates the simultaneous exercise of multiple rights and obligations in maritime zones. Coexistence is embedded in the functional architecture of UNCLOS, particularly in the EEZ through due regard obligations under Articles 56(2) and 58(3). From an international law perspective, this implies a balance of interests. There are two scenarios to consider about coexistence at sea. One is the balance of interests between different states, and the second relates to the balance of interests between users and the protection of the marine environment subject to the jurisdiction of one coastal state. These two forms of coexistence engage distinct legal and institutional mechanisms: the first through consultation and cooperation between states, and the second through domestic spatial planning and regulatory integration.

Coexistence at Sea between States

Fostering coexistence between several uses in the EEZ aligns with the compliance of due regard obligations. It also reflects the expectation that sovereign rights must be exercised in a manner that respects the rights and legitimate interests of other states. In fact, the co-location of MPAs and offshore wind farms could offer an effective solution for minimizing spatial conflicts and avoiding restrictions on the rights of other states. As discussed below, there are no legal barriers hindering states from installing offshore wind infrastructures within MPAs. However, this reference to "no legal barriers" should be interpreted cautiously since coexistence remains contingent upon the compatibility of offshore wind operations with conservation objectives and procedural obligations such as EIAs and stakeholder consultation. While the compatibility of such dual use with conservation varies depending on the conservation measures of MPAs, coastal states have the jurisdiction to pursue both energy development and conservation goals within the same area, provided that they act in accordance with UNCLOS and relevant regional frameworks.

Since the deployment of offshore wind farms in the Baltic mainly occurs in the EEZ,[55] this maritime zone is particularly important for developing multi-use ocean spaces. In the EEZ, coastal states have the sovereign right to exploit energy from wind in accordance with Article 56(1) of UNCLOS. As one of the authors argues elsewhere, coastal states have ample discretion to select areas for developing offshore wind power in their EEZ. Yet, this does not imply a *de facto* "priority over the rights of other States to use a particular marine space"[56] because sovereign rights are not absolute.[57]

[55] Rolf Einar Fife, "Obligations of 'Due Regard' in the Exclusive Economic Zone: Their Context, Purpose and State Practice" (2019) 34 *International Journal of Marine and Coastal Law* 43, 52.

[56] Gabriela Argüello, "The Art of Balancing Interests at Sea: Due Regard and Large-Scale Offshore Wind Power" (2023) *Cambridge International Law Journal Blog*.

[57] *Fisheries Jurisdiction (United Kingdom v Iceland),* Judgment, ICJ Reports 1974, p. 3, [71].

Article 56(2) imposes two obligations on the coastal state when exercising its sovereign rights. The first obligation is acting with due regard to the rights and duties of other states, and the second is acting in a manner compatible with the Convention. Due regard is a mutual obligation between the coastal state and other states in exercising their respective rights within the EEZ. Articles 56(2) and 58(3) prescribe respectively:

> In exercising its rights and performing its duties under this Convention in the exclusive economic zone, the coastal State shall have due regard to the rights and duties of other States …
>
> In exercising their rights and performing their duties under this Convention in the exclusive economic zone, States shall have due regard to the rights and duties of the coastal State and shall comply with the laws and regulations adopted by the coastal State in accordance with the provisions of this Convention and other rules of international law.

One of the main characteristics of due regard is the "non-absolute character"[58] of the rights enjoyed by states and the need to balance them. It is also a recognition that coastal states' sovereign rights and functional jurisdiction coexist with the rights of other states as prescribed in Article 87 of UNCLOS. This *de facto* coexistence is prone to conflict as more users compete for the same space. It is worth noting that due regard is foremost an obligation of conduct for which the purpose is not to prioritize one state's rights over another, but to ensure a balanced consideration of all parties involved through obligations of consultation and negotiation. This was confirmed in the *Enrica Lexi* case, where the tribunal clarified that "the ordinary meaning of 'due regard' does not contemplate priority of one activity over another."[59] Instead, as Forteau argues, due regard obligations aim to find "mutual supportiveness,"[60] and as such, the design of multi-use spaces is in line with general obligations under UNCLOS.

As discussed above, offshore wind structures can have spillover effects for protecting marine ecosystems. Apart from due regard obligations, one limitation that coastal states must observe in the exercise of sovereign rights is acting in a manner compatible with UNCLOS. This means, for example, complying with the obligations to protect the marine environment. In relation to MPAs, fulfilling this duty can be achieved by conducting an EIA[61] to assess the compatibility of offshore wind farms and MPAs. Beyond conventional EIAs, there are transboundary coordination mechanisms, such as those promoted by HELCOM to strengthen coherence in the Baltic Sea through maritime spatial planning (MSP).[62] While conventional EIAs evaluate the overall impact of an activity on the marine environment, offshore wind licensing processes could include specific requirements to ensure the compatibility of offshore wind projects and conservation measures.

[58] Zhen Sun, *Finding a Balance in the Exclusive Economic Zone: Conflict and Stability in the Law of the Sea* (Cambridge University Press, 2025), 81.

[59] *'Enrica Lexie' Incident (Italy v. India)*, PCA Case No. 2015- 28, Award of 21 May 2020, [974].

[60] Mathias Forteau, "The Legal Nature and Content of 'Due Regard' Obligations in Recent International Case Law" (2019) 34(1) *International Journal of Marine and Coastal Law* 25.

[61] *Chagos Marine Protected Area Arbitration*, note 19, [322].

[62] HELCOM, *Joint HELCOM-VASAB Maritime Spatial Planning Working Group, Regional Maritime Spatial Planning Roadmap 2021–2030* (2021).

Overall, most MPAs allow a degree of coexistence with other marine uses. Article 194(4) of UNCLOS, for example, prescribes that measures taken to reduce, prevent, and control pollution must not cause "unjustifiable interference with activities carried out by other States." In the *Chagos Marine Protected Area Arbitration* the tribunal concluded that states' obligations extend beyond pollution control to include broader measures for marine ecosystem conservation, affirming that MPA conservation efforts can be comprehensive.[63] Additionally, the tribunal interpreted unjustifiable interference as being equivalent to due regard obligations established in Article 56(2) of UNCLOS. This interpretation requires balancing competing rights, considering factors like the potential impairment of activities, the nature of those activities, and available alternatives.[64] In essence, the establishment of MPAs does not inherently imply a complete restriction on other marine uses; rather, it necessitates an assessment of compatibility. In practice, however, Baltic states remain in the early stages of implementing coexistence frameworks through national MSP plans.

Coexistence of Users Subject to the Jurisdiction of a Single Coastal State

Coastal states not only balance interests with other states, but must also assess conflicting interests of marine uses subject to their jurisdiction. In practice, MSP has gained popularity as a tool for managing conflicts between users and preserving specific marine areas from human activities.[65] At present, more than 100 countries have implemented MSP processes and relevant legislation.[66] For example, in 2014, the EU adopted Directive 2014/89/EU establishing a framework for maritime spatial planning.[67] Article 5 of the Directive explicitly promotes coexistence in implementing MSP. However, it should be noted that coastal states do not have sovereignty beyond the territorial sea, which could potentially limit the effectiveness of MSP in resolving all relevant conflicts, and the planning must be compatible with the jurisdictional framework of UNCLOS.[68]

When suitable areas for offshore wind development overlap with MPAs or when offshore wind parks could potentially be classified as OECMs, MSP becomes a valuable tool for maximizing the potential coexistence between offshore wind parks and conservation objectives. For instance, in the context of fisheries management, coastal states could take measures to displace harmful practices such as trawling or establish "no-take zones" where all fishing activities are prohibited. This prioritization stems from the sovereignty of the coastal state over its territorial sea[69] and its sovereign rights to explore, exploit, conserve, and manage the natural resources within its EEZ.[70] The

[63] *Chagos Marine Protected Area Arbitration*, note 19, [538].
[64] Ibid, [519], [540].
[65] Jon Day, "Zoning: Lessons from the Great Barrier Reef Marine Park" (2002) 45(2) *Ocean & Coastal Management* 139, 141–142.
[66] IOC-UNESCO, *State of the Ocean Report*, Pilot Edition (2022), 28.
[67] Directive 2014/89/EU of 23 July 2014 establishing a framework for maritime spatial planning, OJ L 257/135, 28 August 2014 [hereinafter, Maritime Spatial Planning Directive].
[68] Maes, note 16, 799–804.
[69] UNCLOS, Art 2.
[70] UNCLOS, Art 56(1)(a).

only constraint for coastal states is the obligation to promote optimum utilization of living resources in the EEZ as prescribed in Article 62(1)–(4) of UNCLOS.[71] Apart from this, coastal states have significant discretion to prioritize various uses within their jurisdiction. Notably, fisheries are considered as mobile, and UNCLOS does not confer rights of access to specific fishing grounds.[72] For example, in Germany, fishermen have a general right to fish "in waters that are not legally occupied by other interests."[73] Additionally, wind power developers are required to pay a fee to support environmental conservation efforts, which is reduced if fishing is prohibited within the wind farm.[74]

MPAs and Offshore Wind Parks

Policy Objectives of MPAs

Over the past decades, the political impetus for MPAs has increased. These efforts stem from an international policy agenda that emerged with the rise of sustainable development in the early 1990s, mainly through Agenda 21, which calls on states to identify and manage marine ecosystems, including establishing protected areas.[75] The adoption of the Aichi Biodiversity Targets set ambitious goals for MPA coverage. Since then, coastal states and international organizations alike have established MPAs in accordance with their jurisdiction and competences. The EU and HELCOM follow this global trend.

The most recent international goal under the Global Biodiversity Framework calls for the adoption of the 30-by-30 target.[76] While increasing the quantitative target, this framework also provides for a more multifaceted approach to area-based conservation measures. This entails not only expanding spatial coverage, but also improving ecological representativity, governance quality, and enforcement capacity. However, in practice, a gap persists between nominal coverage and actual ecological effectiveness, often described as the problem of "paper parks."[77] Target 3 of the Framework provides that effective protection should be achieved through systems of protected areas and OECMs. In 2019, the World Wide Fund for Nature (WWF) reported that while MPAs covered 12.4 percent of the EU marine area, only 1.8 percent was covered by MPA management plans.[78] In 2020, the European Environment Agency (EEA) reported that

[71] "[T]he coastal State may not remain inactive with respect to the exploitation of the fisheries in its EEZ, but has obligations to ensure optimum utilization of these resources, be it by harvesting them itself or by allowing other States to do so." Valentin Schatz, "The Settlement of EEZ Fisheries Access Disputes under UNCLOS: Limitations to Jurisdiction and Compulsory Conciliation" (2023) 13(1) *Goettingen Journal of International Law Studies* 82, 85.

[72] For claim about historical fishing rights, see Leonardo Bernard, "Historic Fishing Rights and the Exclusive Economic Zone" (2021) 18(2) *Indonesian Journal of International Law* 161.

[73] Swedish Government Inquires, *Regulations and Procedures for Offshore Wind Power in Denmark, Finland, Germany and the United Kingdom/England* (2024), 61.

[74] Ibid.

[75] United Nations General Assembly, *Agenda 21*, UN Doc. A/CONF.151/26 (1992), [17.85].

[76] Decision 15/4, note 6.

[77] Nele Matz-Lück and Johannes Fuchs, "The Impact of OSPAR on Protected Area Management Beyond National Jurisdiction: Effective Regional Cooperation or a Network of Paper Parks?" (2014) 49 *Marine Policy* 155.

[78] World Wild Fund for Nature (WWF), *Protecting Our Ocean: Europe's Challenges to Meet the 2020 Deadlines* (2019), 6.

less than 1 percent of European MPAs could be considered marine reserves with full protection (e.g., through fishing bans), and that management of MPAs needed to be strengthened. In 2020, the European Commission also estimated that less than 1 percent of marine areas were strictly protected in the EU.[79] These figures reveal an enforcement deficit. The concept of full protection is not uniformly defined, and under the IUCN classification only categories Ia and Ib, strict nature reserves and wilderness areas, impose comprehensive restrictions on extractive and industrial activities, while categories II–VI allow varying degrees of sustainable use.

In the Baltic Sea, a key development for the adoption of MPAs was the adoption of the 1992 Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention),[80] with Article 15 serving as the legal foundation for the creation and management of a coherent network of MPAs in the region.[81] While this provision establishes a regional obligation, its normative force depends on the implementation of management measures and the submission of periodic reports. Compliance assessments conducted under HELCOM have repeatedly identified uneven implementation and gaps in monitoring.

The vast majority of MPAs established under the auspices of HELCOM are situated in territorial waters, but there are 33 MPAs located, at least partially, within EEZs in the Baltic Sea. All of these protected areas overlap with Natura 2000 networks.[82] Specific EU legislation on protected areas, also known as the Natura 2000 network, allows for potential coexistence with other marine uses. This is contingent on assessments that evaluate the implications of a project on the protected area "in view of the site's conservation objectives."[83]

Compatibility of Offshore Wind Parks and MPAs

As discussed above, international and EU law do not prohibit the coexistence of protected areas with offshore wind installations. Yet, the feasibility of coexistence must be assessed on a case-by-case basis, considering the specific conservation measures applicable to each MPA. For example, MPAs with strict management measures prohibiting all human activity do not support co-location with offshore wind power. In the EU and the Baltic Sea, this limitation affects 10 percent of MPAs that must have stringent conservation measures in place. To assess the compatibility of a marine use that overlaps with MPAs, it is fundamental to consider the impacts of the proposed activity. Offshore wind farms are deemed to have lower impacts on the marine environment than "fishing, dredging, shipping, oil and gas exploitation and recreation."[84] Nonetheless, there is still scientific uncertainty regarding the

[79] European Court of Auditors, *Special Report Marine Environment: EU Protection Is Wide but Not Deep* (Special Report 26/2020).

[80] Convention on the Protection of the Marine Environment of the Baltic Sea Area, adopted 9 April 1992, entered into force 17 January 2000, 1507 UNTS 166 [hereinafter, Helsinki Convention].

[81] HELCOM Recommendation 35/1, System of Coastal and Marine Baltic Sea Protected Areas (1 April 2014).

[82] HELCOM Map and Data Service, "MPAs" at https://mpas.helcom.fi/apex/f?p=103:5:::::: (accessed 20 March 2025).

[83] Habitats Directive, note 17, Art 6(3).

[84] P. J. Stephenson, *Opportunities Around the Colocation of Offshore Wind Energy with Marine Protected Areas*, Report for the Renewables Grid Initiative (2023), 1, 18.

extent of the negative and positive impacts of wind structures on the marine environment. Given this uncertainty, states should act with diligence, regulating and controlling activities in accordance with the precautionary approach to prevent damage. Arguably, the coexistence of MPAs with other marine uses would tolerate a certain level of harm. To this extent, it is fundamental to assess the "foreseeability of harm or likelihood of harm and its potential gravity,"[85] for example, through EIAs.

Most MPA regulations allow coexistence after conducting EIAs. The requirement for conducting an EIA is stipulated in various binding and non-binding instruments. Notable examples include Principle 17 of the Rio Declaration on Environment and Development,[86] the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention),[87] the BBNJ Agreement adopted under UNCLOS,[88] and the CBD, just to mention a few. Considering the growing number of instruments adopting EIA obligations and increasing state practice, the principle of EIA has also passed into a customary law as observed by judicial bodies such as the International Court of Justice[89] and the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea.[90]

In the Baltic Sea, HELCOM has not adopted any EIA guidelines for offshore wind structures and installations. However, Recommendation 34E/1 for "safeguarding important bird habitats and migration routes in the Baltic Sea from negative effects of wind and wave energy production at sea" encourages member states to conduct a strategic environmental assessment (SEA) and EIA(s) prior to the establishment of these offshore structures.[91] Additionally, this recommendation includes a series of suggestions, including, for example, the mapping of bird migration routes and staging areas, the application of the precautionary and ecosystem-based approaches, the exchange of information, joint assessments of cumulative impacts, and monitoring and planning of marine space in a Baltic-wide context. A similar approach is found in the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS),[92] where the Meeting of the Parties to this treaty recommends states conduct both SEAs and EIAs taking into account cumulative effects.[93]

[85] Alan Boyle and Catherine Redgwell, *Birnie, Boyle, & Redgwell's International Law and the Environment* (4th ed) (Oxford University Press, 2021), 170.

[86] United Nations General Assembly, Rio Declaration on Environment and Development, UN Doc A/Conf.151/26 (Vol. I) 1992.

[87] Espoo Convention on Environmental Impact Assessment in a Transboundary Context, adopted 25 February 1991, entered into force 10 September 1997, 1989 UNTS 309 [hereinafter, Espoo Convention].

[88] Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ Treaty), adopted 19 June 2023, will enter into force 17 January 2026, at https://treaties.un.org/doc/Treaties/2023/06/20230620%2004-28%20PM/Ch_XXI_10.pdf (accessed 5 November 2025).

[89] See, for example, *Case Concerning Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, ICJ Reports 2010, p. 14, [204].

[90] *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, Advisory Opinion, 1 February 2011, ITLOS Reports 2011, p. 10, [145].

[91] HELCOM Recommendation 34E/1, Safeguarding Important Bird Habitats and Migration Routes in the Baltic Sea from Negative Effects of Wind and Wave Energy Production at Sea (3 October 2013).

[92] Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas, adopted 17 March 1992, entered into force 29 March 1999, 1772 UNTS 217 [hereinafter, ASCOBANS].

[93] Meeting to the Parties to ASCOBANS, Resolution No. 2: Adverse Effects of Underwater Noise on Marine Mammals during Offshore Construction Activities for Renewable Energy Production (18 September 2009).

It is noteworthy that MPAs established under HELCOM in EEZs of the Baltic Sea states overlap with those designated according to EU legislation, that is, the Birds and Habitats Directives. These Directives are the fundamental pillars for protecting valuable species and habitats. The identification of protected habitats and habitats of protected species constitutes the Natura-2000 protected areas,[94] which also encompass marine areas under the jurisdiction of member states.[95] Article 6(3) and (4) of the Habitats Directive provides room for coexistence between protected areas and other uses, plans or projects, such as offshore wind farms. Arguably, the Directive strikes a delicate balance between conservation and other social and economic goals.

If the project is expected to have a significant impact on habitat, an assessment is required before authorization is granted. However, Article 6(4) of the Habitats Directive states that a project, plan, or activity may still be approved in the face of a negative assessment, provided that there is an overriding public interest, including economic or social interests. What constitutes overriding interest has been subject to debate, but Council Regulation (EU) 2022/2577, which provides a framework to accelerate the deployment of renewable energy, introduced "a rebuttable presumption that renewable energy projects are of overriding public interest for the purposes of the relevant environmental legislation."[96] Overall, these legislative efforts may facilitate the co-location of offshore wind structures within MPAs. Most importantly, they demonstrate a clear prioritization of the energy transition at the EU level. The EU Commission also recommends using MSP to support the coexistence of energy infrastructure with other uses and lifting national legislation banning the multiple use of space.[97]

Article 1 of the Renewable Energy Directive (RED III) identifies renewable acceleration areas that encompass land, inland waters, and sea areas. By 21 February 2026, member states must map these areas for the development of renewable energy, ensuring that the designated locations will not lead to significant environmental impacts. RED III also aims to streamline the permitting processes associated with this development. The objective of identifying acceleration areas is to speed up permit-granting procedures for renewable energy and related infrastructure projects. In acceleration areas, coexistence with MPAs is not possible. According to Article 15(c)(ii) of RED III, member states must exclude "Natura 2000 sites and areas designated under national protection schemes for nature and biodiversity conservation, major bird and marine mammal migratory routes."

OECMs and Offshore Wind Parks

MPA Jurisdictional Hurdles and Offshore Wind Parks as Potential OECMs

When jurisdictional hurdles hinder the establishment of an MPA, offshore wind farms, if designed with biodiversity in mind, could instead be recognized as OECMs.

[94] Habitats Directive, note 17, Annex I and II; Birds Directive, note 17, Annex I.

[95] About the applicability of the Habitats Directive to the EEZ, see Case C-6/04, *Commission v. United Kingdom* (Habitats) [2005] ECLI:EU:C:2005:626; Hanna Katharina Müller, *A Legal Framework for a Transnational Offshore Grid in the North Sea* (Intersentia, 2015), 70–72.

[96] See Council Regulation (EU) 2022/2577 of 22 December 2022 laying down a framework to accelerate the deployment of renewable energy, OJ L 335/36, 29 December 2022, Preamble, 4th Recital and Art 3.

[97] European Commission, *Guidance to Member States on Good Practices to Speed up Permit-Granting Procedures for Renewable Energy and Related Infrastructure Projects*, SWD(2024) (13 May 2024), 24.

To this end, there should be evidence showing sustained long-term *in situ* biodiversity outcomes.

In the EEZ, arguably, there is a difference in terms of quality between exercising a sovereign right, such as producing energy from wind, and exercising jurisdiction, such as protecting the marine environment. Although sovereign rights are not synonymous with territorial sovereignty, they represent an "extract of the broader concept of sovereignty"[98] limited to the specific rights granted to the coastal state in this zone, along with corresponding obligations, such as due regard for the rights of other states. These rights are exclusive, and as Sun explains, it "demonstrates a clear presumption in favor of the plenary powers and jurisdiction of the coastal State."[99] In a similar fashion, Judge Oda in his dissenting opinion in *Tunisia v. Libyan Arab Jamahiriya* explained that

> [t]he mode of exercise of jurisdiction is no different from that exercised by the coastal State within its territorial sea and, so far as the development of the natural resources of the sea is concerned, its competence in the Exclusive Economic Zone is equivalent to that it enjoys in the territorial sea.[100]

The term "jurisdiction" is more limited than sovereign rights, and Article 56(1)(b) qualifies its exercise, requiring states to observe the relevant provisions of the Convention. UNCLOS also provides for safeguards to protect the rights of other states.[101] The protection and preservation of the marine environment is an example of this. Under Article 56(b)(iii) of UNCLOS, coastal states have jurisdiction over the protection and preservation of the marine environment but lack sovereign rights in this matter. The jurisdiction must be exercised as provided for in UNCLOS. When it comes to shipping, for instance, Article 211(5) limits the prescriptive jurisdiction of coastal states. In the EEZ, national legislation, if adopted, must conform and give effect to generally accepted international rules and standards.

The *Chagos Marine Protected Area Arbitration* recognized that Article 194(5) of UNCLOS gives coastal states jurisdiction to establish MPAs with measures to protect marine habitats and ecosystems.[102] However, when it comes to MPA measures that impact the legitimate uses of other states, in particular navigational freedoms, coastal states should undertake more burdensome processes of consultation with other states and may require support from relevant sectoral organizations, such as the IMO. This distinction is noteworthy, as it suggests that offshore wind farms, if declared as OECMs, could potentially serve as a means to achieve conservation outcomes in cases where regulatory and procedural challenges hinder the establishment of MPAs. This is because the deployment of offshore

[98] Alexander Proelss, "Article 56: Rights, Jurisdiction and Duties of the Coastal State in the Exclusive Economic Zone" in Alexander Proelss (ed), *The United Nations Convention on the Law of the Sea: A Commentary* (Hart Publishing, 2017), 424.

[99] Sun, note 58, 47.

[100] *Continental Shelf (Tunisia/Libyan Arab Jamahiriya)*, Judgment of 24 February 1982, Dissenting Opinion of Judge Oda, [124].

[101] Sun, note 58, 47; Robin R. Churchill and A. Vaughan Lowe, *The Law of the Sea* (3rd ed) (Manchester University Press, 1999), 167; Edward D. Brown, "The Exclusive Economic Zone: Criteria and Machinery for the Resolution of International Conflicts between Different Users of the EEZ" (1997) 4(6) *Maritime Policy and Management* 325, 334.

[102] *Chagos Marine Protected Area Arbitration*, note 19, [538].

wind farms, unlike the establishment of MPAs in the EEZ, falls within the sovereign rights of states whereby states arguably have more discretion to plan for their deployment. However, since the primary objective of offshore wind farms is electricity generation, their recognition as an OECM hinges on (i) clear conservation objectives at the site level, (ii) binding management measures (e.g., restrictions on trawling, shipping lanes, construction timing), (iii) measurable biodiversity indicators with baselines, and (iv) a monitoring and reporting regime capable of demonstrating sustained outcomes.

In the EU, the establishment of MPAs with explicit measures affecting fisheries must be assessed in light of the EU Common Fisheries Policy.[103] This is challenging, as it effectively requires the support of the European Commission and Council for any MPA measures that restrict fisheries, whether in the Baltic Sea or in other EU marine space. This puts EU member states in a difficult position. They are responsible for creating MPAs and complying with commitments under the Birds and Habitats Directives as well as the Marine Strategy Framework Directive.[104] But as fishing is an EU exclusive competence, the introduction of conservation measures requires cooperation and development of joint recommendations with other states having a direct management interest as well as the Commission, in line with Article 11 of the Common Fisheries Policy regulation.[105] While aiming to promote regional cooperation, this process has been described by EU auditors as complicated and as effectively preventing member states from imposing area-based fisheries restrictions in their EEZ.[106] In this institutional setting, OECM recognition for offshore wind parks is a feasible alternative. As described above, the displacement of fisheries, in most cases, is an incidental effect of the construction of large-scale offshore wind structures. Consequently, there is ample opportunity to deploy parks as OECMs in the EEZ. However, displacement alone does not equal conservation, and it must be demonstrated that offshore wind structures have positive and sustained biological outcomes.

Overall, the lack of a sovereign mandate to adopt MPA measures on the central environmental pressures represented by shipping and fisheries has rendered the ambition to integrate measures in MPAs difficult to implement in practice. Furthering MPA objectives in regional organizations, such as HELCOM, at least in theory, has the advantage of first seeking support from neighboring states, thereby facilitating acceptance at the sectoral level. However, this comes with a considerable risk of ambitious proposals having to undergo lengthy consultations or being watered down as concerns expressed by other states are considered.

In conclusion, while both the law of the sea and EU law aim to promote opportunities for coexistence among competing interests, the degree of autonomy granted to coastal states in designating marine spaces differs considerably, depending on the purpose. For offshore wind installations in the EEZ, coastal states have extensive discretion when planning for this development.

[103] Regulation (EU) No 1380/2013 of 11 December 2013 on the Common Fisheries Policy, OJ L 354/22, 28 December 2013.

[104] Marine Strategy Framework Directive, note 39.

[105] Regulation (EU) No 1380/2013, note 103.

[106] European Court of Auditors, note 79.

Policy Objectives on OECMs

OECMs have been explicitly incorporated into the EU International Ocean Governance Agenda,[107] and this area-based management can be implemented to achieve the 30-by-30 target[108] of protected areas in EU marine waters. From this target, 10 percent should be strictly protected. This level of protection is equivalent to the IUCN MPA category 1a, Strict Nature Reserve, where human visitation and uses are strictly controlled and limited.[109] This means that the coexistence potential in strictly preserved areas is very limited. However, the remaining 20 percent could be implemented more flexibly, potentially by OECMs.

As discussed below, OECMs may, in fact, be more suitable for fostering coexistence between marine environmental protection and large-scale offshore wind projects. This is due to their unique characteristics: While the primary objective of OECMs may not necessarily be the protection of biological diversity, such protection can occur as a secondary benefit or even as an unintended positive consequence. To avoid conceptual blurring with MPAs, any secondary conservation in offshore wind sites should be measured against management objectives and measurable targets.

Compatibility with Offshore Wind Parks and OECMs

In the Baltic Sea, HELCOM adopted OECMs as a management tool in its 2021 Baltic Sea Action Plan, including criteria for identifying OECMs.[110] These criteria align closely with IUCN guidelines, which outline three approaches to biodiversity conservation within OECMs: primary, secondary, and ancillary conservation. Under primary conservation, OECMs could technically qualify as MPAs; however, the managing authority has chosen not to formally designate them as protected areas.[111] In relation to the development of offshore wind farms, secondary and ancillary conservation measures are far more relevant.

Secondary conservation focuses on active biodiversity management by limiting, for example, shipping and fishing in wind park areas to minimize environmental impacts. Additionally, management authorities could also consider the design of offshore infrastructure to boost the reef effect. In this context, while the main management goal is electricity generation, the management authority proactively incorporates secondary conservation strategies. In the Baltic Sea, HELCOM is evaluating the feasibility of designating offshore wind parks as OECMs that fall under secondary conservation. Given that large-scale offshore wind is a relatively new marine use, there are numerous possibilities for establishing secondary conservation measures, including licensing

[107] European Commission, Setting the Course for a Sustainable Blue Planet—Joint Communication on the EU's International Ocean Governance Ageda, JOIN(2022) 28 final (20 June 2022) 1,11.

[108] European Commission, note 6.

[109] Nigel Dudley (ed), *Guidelines for Applying Protected Area Management Categories: Developing Capacity for a Protected Planet*, Best Practice Protected Area Guidelines Series No. 21 (IUCN, 2008), 13–14.

[110] HELCOM, *Baltic Sea Action Plan: 2021 Update* (2021), 14.

[111] IUCN-WCPA Task Force on OECMs, *Recognising and Reporting Other Effective Area-Based Conservation Measures*, Protected Area Technical Report Series No. 3 (IUCN, 2019), 3.

procedures that include monitoring obligations in relation to impacts on the marine environment, infrastructure design and restriction of other activities, such as fishing.[112] However, challenges persist as the overall impacts of offshore wind farms in marine ecosystems are still debated, prompting authorities to proceed with caution. Documented effects include harm to bird populations, the risk of invasive marine species, changes in the seafloor sediment, and underwater noise.[113]

Nevertheless, from a legal standpoint, the term OECM does not imply a complete absence of negative impacts, but the threshold of tolerable harm has yet to be established and probably should be analyzed on a case-by-case basis approach. HELCOM, for example, has proposed a "net benefit" standard for biodiversity, where the impacts do not have to affect the overall status of biodiversity.[114] Consequently, OECM recognition should be coupled with science-based thresholds (e.g., collision risk limits or underwater noise caps). It is particularly important to establish (i) quantitative indicators (e.g., species-specific abundance trends, habitat integrity indices), (ii) environmental baselines, (iii) monitoring timelines aligned with turbine lifecycles, and (iv) adaptive measures.

At the moment, offshore wind farms have ancillary conservation effects. This occurs because offshore wind is often planned to coexist with other marine uses, such as aquaculture, to reduce spatial conflicts.[115] Despite co-location efforts, preventive effects discussed above provide incidental benefits for biodiversity protection. Preventive measures refer to the *de facto* exclusion of certain activities, such as shipping and specific types of fishing, like trawling, to safeguard offshore wind installations and prevent collisions and allisions.[116] However, passive exclusion alone does not satisfy OECM standards unless it demonstrably improves biodiversity outcomes. Authorities should also evaluate displacement risks and ensure that pressure is not merely shifted to equally or more sensitive sites.

Furthermore, the physical structures associated with offshore wind farms, such as foundation installations, contribute positively to biodiversity by creating an artificial reef effect. These structures attract various species and can serve as nursery grounds, enhancing local biodiversity. This reef effect is generally classified as an ancillary benefit, but may also qualify as a secondary conservation measure if the design of these artificial structures incorporates biodiversity considerations from the outset. For example, the Meeting of the Parties of ASCOBANS recommends using construction techniques that minimize "high underwater noise source levels during the periods of

[112] HELCOM, note 8, 16–17.

[113] Pardo et al., note 15, 4.

[114] HELCOM, note 8, 17.

[115] Tara Hooper, Matthew Ashley and Melanie Austen, "Capturing Benefits: Opportunities for the Co-Location of Offshore Energy and Fisheries" in Katherine L. Yates and Corey Bradshaw (eds), *Offshore Energy and Marine Spatial Planning* (Routledge, 2018), 189, 199–202; Van Hoey et al., note 41, 71–72; Bella Buck, Gesche Krause, Bernadette Pogoda et al., "The German Case Study: Pioneer Projects of Aquaculture-Wind Farm Multi-Uses" in Bella Buck and Richard Langan (eds), *Aquaculture Perspective of Multi-Use Sites in the Open Ocean: The Untapped Potential for Marine Resources in the Anthropocene* (Springer, 2017), 253; Bonsu et al., note 14.

[116] Jolien Buyse, Kris Hostens, Steven Degraer et al., "Offshore Wind Farms Affect the Spatial Distribution Pattern of Plaice Pleuronectes Platessa at Both the Turbine and Wind Farm Scale" (2022) 79 *ICES Journal of Marine Science* 1777, 1783–1784.

the year with the highest densities of small cetaceans in the area."[117] Finally, it is generally argued that OECMs are identified or recognized rather than established.[118] This is particularly problematic because these could be used as greenwashing and as an alternative to bypass environmental legislation on protected areas.

License Procedures as the Means to Incentivize Coexistence

Licensing procedures can play a key role in promoting coexistence between offshore wind farms and environmental conservation. Beyond requirements to conduct SEAs and EIAs,[119] the inclusion of non-price criteria is now a central feature of sustainability-oriented licensing processes for offshore wind. As explained by Herrera Anchustegui and Soliman Hunter, licensing can be granted through two primary processes: competitive bidding, where licenses are awarded based on price, or discretionary allocation, which relies on predefined criteria.[120] In the EU, the Commission recommended member states include non-price criteria in prequalification, granting processes, or both.[121] Among others, environmental sustainability is one of such criteria. According to the Commission, environmental sustainability includes, for example, measures that contribute to the restoration of ecosystems or aspects concerning the disposal of structures, products, and installations at the end of the operative life of wind parks.[122]

Environmental criteria should encompass site selection, design of both wind turbine foundations and blades, operational considerations, and decommissioning. When selecting a deployment site, it is crucial to avoid key migratory routes of seabirds and mammals to minimize ecological disruption. The WWF considers that offshore wind parks should not be built within MPAs.[123] However, this broad criterion is overly restrictive because MPAs and their associated conservation measures vary greatly in scope. As argued above, offshore wind farms can, in some cases, be compatible with conservation measures. Thus, a case-by-case approach is necessary instead.

The design of foundations depends on multiple factors, including "water depth, seabed substrate, tides and local current strength."[124] Installations and structures built with biodiversity in mind are also referred to as nature-inclusive design, namely, features intentionally engineered to deliver positive biodiversity, such as textured scour protection, varied rock sizes, cable-protection elements with habitat niches, and bird-safe

[117] Meeting to the Parties to ASCOBANS, note 93.

[118] Daniela Diz, "The Interface Between the BBNJ Agreement and RFMOs" in Bjørn Kunoy, Tomas Heidar and Constantinos Yiallourides (eds), *International Fisheries Law* (Routledge, 2024), 309, 314.

[119] Anne Marie O'Hagan, "Regulation of Marine Renewable Energy" in Robin Warner and Stuart Kaye (eds), *Routledge Handbook of Maritime Regulation and Enforcement* (Routledge, 2016), 295, 303–307.

[120] Tina Soliman-Hunter and Ignacio Herrera Anchustegui, "Offshore Wind Licensing Trends and Observations" in Ignacio Herrera Anchustegui and Tina Soliman-Hunter (eds), *Offshore Wind Licensing* (Edward Elgar Publishing, 2024), 366.

[121] European Commission, Commission Recommendation (EU) 2024/1344 on Auction Design for Renewable Energy (13 May 2024), [6].

[122] Soliman-Hunter and Herrera Anchustegui, note 120, [13].

[123] WWF, *Non-Price Criteria as Sustainability and Social Measures in Offshore Wind Prequalification and Auction Design* (WWF, 2024), 6–7.

[124] Karl M. Werner, Holger Haslob, Anna F. Reichel et al., "Offshore Wind Farm Foundations as Artificial Reefs: The Devil is in the Detail" (2024) 272 *Fisheries Research* 106937, 1.

lighting regimes.[125] In Europe, the monopile is the most commonly used structure. According to Werner et al., "a monopile with rock protection on the seabed enhances the reef effect by increasing habitat heterogeneity, density, and biodiversity."[126] Regarding the lighting systems on turbine blades, special attention must be given to nocturnal birdlife to minimize disturbances and reduce the impact on migratory species. During the operation of wind parks, the reduction of noise is a relevant environmental criterion, together with the environmental monitoring and information sharing obligations. While environmental non-price criteria have become more prevalent concerning design and operation, decommissioning and disposal have been largely neglected.[127] Criteria still need to be developed in relation to reducing the use of materials through recycling, re-use, management of waste, and the full lifecycle greenhouse-gas footprint of wind turbines. Where national law is silent, license conditions can require decommissioning plans, financial security (bonds), and end-of-life material recovery benchmarks.

Several northern European states incorporate non-price criteria in licensing processes. For instance, Denmark, Germany, and the Netherlands have established specific noise level thresholds.[128] In April 2024, Denmark launched a tender procedure to expand its offshore wind energy capacity by 6 GW in the North Sea, Kattegat, Kriegers Flak II, and Hasselø. The process includes ambitious environmental criteria, such as third party verified Environmental Product Declarations of blades and towers, a lifecycle assessment of the project, recyclable blades, and environmental monitoring.[129] To serve their function, non-price criteria must be objective and quantifiable to allow comparison between project developers. Still several states include general criteria that run the risk of inconsistent evaluations and legal uncertainty. Norway, for example, in the prequalification process for Sørlige Nordsjøen II required applicants to "endeavor to minimize the project's carbon print … contribute to good waste management with a particular emphasis on recycling."[130] The European Commission urged member states to avoid overly broad criteria or those that duplicate existing EU requirements, and instead to prioritize criteria that deliver a verifiable environmental outcome.[131] Overall, the offshore wind industry is still relatively young, presenting plenty of opportunities to design and deploy wind farms that align with conservation measures.

Conclusion

The deployment of ambitious climate technology at sea, including large-scale wind parks, has brought to the fore the possibility of implementing multi-use ocean spaces

[125] Annemiek Hermans, Oscar G. Bos and Ivana Prusina, *Nature-Inclusive Design: A Catalogue for Offshore Wind Infrastructure* (Ministry of Agriculture, Nature and Food Quality, The Netherlands, 2020), 20.

[126] Werner et al., note 124, 1; see also Pardo et al., note 15, 5.

[127] Soliman-Hunter and Herrera Anchustegui, note 120, 372–373.

[128] WWF, note 123, 8; Birgitte Egelund Olsen and Bent Ole Gram Mortensen, "Offshore Wind Licensing in Denmark" in Herrera Anchustegui and Soliman-Hunter (eds), note 120, 97.

[129] Klima Energi og Forsyningsministeriet, "Fakta om 6 GW udbud" (2024); Klima Energi og Forsyningsministeriet, "Fakta om bæredygtighedskrav" (2024).

[130] WWF, note 123, 9.

[131] Commission Recommendation (EU) 2024/1344, note 121, [8].

as an alternative to reduce spatial conflicts between users or between users and the protection of the marine environment. In practical terms, spatial planning, licensing processes, and other incentives, including economic and regulatory frameworks, should facilitate the coexistence of several uses and even allow overlapping MPAs and offshore wind parks.

MPAs take a flexible approach to marine environmental management, typically involving more stringent restrictions on harmful activities in areas where biodiversity is particularly at risk. At both international and EU law levels, the ambitious goal to protect 30 percent of marine environments through MPAs and OECMs by 2030 presents an increased likelihood of spatial conflicts with other marine uses. This tension is especially pronounced in the expansion of offshore wind, which shares some parallels with MPAs. Like MPAs, offshore wind projects have attained widespread political support, with many states setting quantitative development targets. For example, in the Baltic Sea, the ambition to reach 70 GW of offshore renewable energy by 2050 in comparison with the existing 3.1 GW implies a substantial spatial demand.

Multi-use spaces offer significant potential to reduce spatial conflicts at sea by fostering coexistence. This approach balances diverse interests and reconciles competing rights while minimizing undue interference wherever possible, aligning closely with due regard obligations established in UNCLOS. These obligations aim to balance interests, rather than prioritize one activity over another. At the EU level, promoting coexistence is also a core objective of maritime spatial planning.

Offshore wind parks, when designed with biodiversity in mind, can be both compatible with and complementary to MPAs. The level of compatibility should be assessed on a case-by-case basis, considering the specific management requirements of each protected area. Both MPAs and offshore wind installations require large geographical areas, yet their impacts on minimizing the impacts of other human activities in a determined area differ significantly. While MPAs often intentionally limit human interference, the construction of offshore wind installations has ancillary conservation results. These conservation outcomes can be both preventive and physical. Maritime safety requirements serve as preventive measures that may inadvertently restrict activities such as navigation and fishing. They can also effectively preclude other economic uses within these zones. However, caution is warranted until more scientific data are available on the positive and negative effects of offshore wind farms. Given the uncertainty in scientific findings, states should adhere to the precautionary principle and carry out SEAs and EIAs.

Overall, most MPAs allow a degree of coexistence with other marine uses. This is particularly true in MPAs located within the EEZ, where the coastal state's obligation to protect the marine environment exists alongside the rights of other states. Integrating non-price environmental criteria into offshore licensing procedures could maximize the compatibility between offshore wind and environmental protection. While several northern European states have implemented specific environmental thresholds, the use of vague criteria challenges consistency in licensing decisions.

MPAs are not the only area-based management tool that can coexist with offshore wind parks. OECMs can complement the 30-by-30 target and offer a flexible approach to promote coexistence. Arguably, however, it is still premature to

designate offshore wind parks as OECMs because this area-based management tool is result oriented. Specifically, the measures must result in a "sustained long-term outcome for the in situ conservation of biodiversity." The long-term effects of deploying large-scale offshore wind remain to be evaluated because the biodiversity outcomes of these structures can be assessed only after the park has been operating for several years.