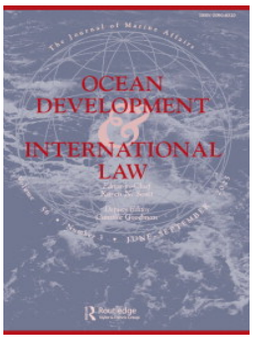

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On the Concept of—and Legal Pathways Towards—Marine Co-existence: Sustainable Offshore Wind Energy in the Baltic and North Seas

Leila Neimane[a], Sigrid Eskeland Schütz[b] and Lena Gipperth[c]

[a]Institute of Legal Science, Faculty of Law, University of Latvia, Riga, Latvia; [b]Faculty of Law, University of Bergen, Bergen, Norway; [c]Department of Law, School of Business, Economics and Law, University of Gothenburg, Gothenburg, Sweden

ABSTRACT

The fast expansion of offshore wind generation in the Baltic and North seas has made efficient marine co-existence frameworks even more important for managing conflicting uses of marine space. While addressing more general policy objectives like energy security and biodiversity conservation, marine co-existence entails creating a balance between offshore wind energy development with such industries as fisheries, shipping, aquaculture, and environmental protection. Based on past research, this article starts with an analysis of marine co-existence as a conceptual framework, separating active marine co-existence—as an interaction between maritime sectors and interests that yields win–win solutions—and passive marine co-existence—with an aim to protect the ecological relevance of unplanned areas. The article then centres on the tools at hand to apply marine co-existence in regulation. Among them are strategic environmental assessments, maritime spatial planning, feasibility planning, procurement policies, and permit-granting procedures—mostly environmental impact assessments and licensing. Inspired by national legal systems, the European Union/European Economic Area, and international legal systems, the article investigates how these instruments help to apply marine co-existence. It contends that although current tools offer a foundation for marine co-existence, their efficacy is limited without specific marine co-existence strategies. More exact policy guidance, integrated regulatory approaches, and more study on cumulative consequences, prioritizing in spatial planning, and cross-sectoral conflict resolution inside increasingly crowded marine habitats are required.

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Introduction

Marine co-existence (marine CoE) refers to the interactions in marine space between sectors like offshore wind energy (OWE), shipping, and fisheries, as well as broader societal interests such as national defence, energy security, climate goals, and nature protection and restoration. Since the mid-2000s, the contemporary understanding of

CONTACT Sigrid Eskeland Schütz sigrid.schytz@uib.no Magnus Lagabøtes plass 1, 5020 Bergen, Norway.

marine CoE has rapidly evolved alongside the ocean governance paradigm and its associated concepts, including the European Union (EU) Maritime Integrated Policy,[1] sustainable blue economy,[2] marine/maritime spatial planning (MSP),[3] and multi-use,[4] to name but a few. More specifically, marine CoE addresses the practical challenges of multiple and often competing uses of maritime space. In the context of OWE development, this includes balancing energy production with traditional activities such as fisheries, shipping, aquaculture and marine conservation. Key issues involve ensuring access for local fishers, protecting biodiversity, managing spatial conflicts and minimizing impacts on sensitive habitats.

In the Baltic and North seas, the need for renewable energy has made the marine CoE increasingly relevant, particularly when choosing sites for large offshore wind farms (OWFs). The binding target for 2030 envisions that the share of renewables in gross final energy consumption within the EU will be at least 42.5 percent.[5] The cumulative EU offshore targets are 86–89 GW by 2030, 259–261 GW by 2040, and 356–366 GW by 2050.[6] The Baltic and North seas are the two largest basins for OWE in Europe. Between 2010 and 2020, the global average levelized cost of energy for newly commissioned OWE projects has dropped by approximately half (48 percent),[7] and governments are establishing contracts for difference[8] and power purchase agreements[9] to ensure price stability and attract investment.

[1] Commission of the European Communities, *An Integrated Maritime Policy for the European Union (Blue Book)* COM(2007) 575 final (2007).

[2] European Commission (EC), *On a New Approach for a Sustainable Blue Economy in the EU*, COM(2021) 240 final (2021).

[3] The terms "maritime spatial planning" and "marine spatial planning" are synonymous. Although the United Nations uses the phrase "marine spatial planning," the EU has a "maritime spatial planning" Directive. Kira Gee and Eirik Mikkelsen, *Understanding Different Types of Conflicts and Coexistence in Marine Spatial Planning (MSP)*, ICES Cooperative Research Report Vol. 357 (2023), 1. See Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning (hereinafter, MSP Directive), OJ L 257, 28 August 2014, ELI: http://data.europa.eu/eli/dir/2014/89/oj.

[4] EC, *Best Practice Guidance in Multi-Use Issues and Licensing Procedures* (2021), 6.

[5] 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 (recast), OJ L 328, 21 December 2018, as amended by Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652 (hereinafter, Renewable Energy Directive [RED III]), OJ L 2023/2413, 31 October 2023, ELI: http://data.europa.eu/eli/dir/2023/2413/oj, current consolidated version: 16 July 2024, ELI: http://data.europa.eu/eli/dir/2018/2001/oj; see also European Commission (EC), *European Wind Charter* (2023).

[6] EC Directorate-General for Energy, "Member States Agree New Ambition for Expanding Offshore Renewable Energy" 18 December 2024, *EC Energy News* at https://energy.ec.europa.eu/news/member-states-agree-new-ambition-expanding-offshore-renewable-energy-2024-12-18_en (accessed 26 March 2025).

[7] International Renewable Energy Agency (IRENA), "Wind Energy" at https://www.irena.org/Energy-Transition/Technology/Wind-energy (accessed 20 September 2024).

[8] The Contract for Difference (CfD) was first introduced in the UK in October 2014. The CfD is predicated on the disparity between the market price and a predetermined strike price. If the strike price exceeds the market price, the CfD counterparty is obligated to compensate the renewable generator for the disparity between the strike price and the market price. If the market price exceeds the stipulated strike price, the renewable generator is obligated to reimburse the CfD counterparty the differential between the market price and the strike price. See International Energy Agency (IEA)/IRENA Policy and Measures Database at https://www.iea.org/policies/5731-contract-for-difference-cfd (accessed 26 March 2025).

[9] The Power Purchase Agreement (PPA) is the contractual arrangement between power providers and purchasers. These contracts facilitate stability for both parties by supplying renewable electricity at mutually agreed rates, hence

OWF sites necessitate extensive, permanent structures, which often lead to space disputes.[10] While offshore wind turbines and foundations account for about 1–3 percent of an OWF's total area,[11] the combined presence of turbines, inter-array and export cables, sub-stations, and subsea transnational interconnectors impacts the water column, seabed, subsoil, and airspace.[12] As space becomes increasingly scarce, this acts as a catalyst for more intersections with other uses and the environment—especially for OWE. This situation almost inevitably results in both nearshore and offshore spatial conflicts.[13] Disregarding these conflicts can create tension between competing interests.[14] In this context, marine CoE emerges as an essential concern.

In the Baltic and North seas, significant marine CoE will encompass offshore renewables and nature protection and restoration owing to the prominent role assigned to them in the context of the Green Deal.[15] Rapid OWE expansion places additional strain on many already vulnerable habitats and species. Nature protection targets have become more demanding, with a minimum of 30 percent of the EU sea area having to be legally safeguarded, at least one-third being designated for stringent protection.[16] These conflicting interests serve as an illustration of the challenging decisions that

encouraging the development of renewable energy sources. EU Agency for the Cooperations of Energy Regulators, "Power Purchase Agreements (PPAs)" at https://www.acer.europa.eu/electricity/market-monitoring/ppas#:~:text=Power%20Purchase%20Agreements%20(PPAs)%20are,renewable%20energy%20sources%20(RES) (accessed 26 March 2025).

10 EC, *Addressing Conflicting Spatial Demands in MSP* (2018), 8, 13.

11 L. Mee, *Complementary Benefits of Alternative Energy: Suitability of Offshore Wind Farms as Aquaculture Sites*, Report of Project 10517 (Seafish, 2006), 36, 11; see also Nikki Christie, Keith Smyth, Richard A. Barnes et al., "Co-location of Activities and Designations: A Means of Solving or Creating Problems in Marine Spatial Planning?" (2014) *43 Marine Policy* 254, 255.

12 Camille Goodman, "Harnessing the Wind Down Under: Applying the UNCLOS Framework to the Regulation of Offshore Wind by Australia and New Zealand" (2023) 54 *Ocean Development & International Law* 253, 257; Maria Madalena das Neves, "Offshore Renewable Energy and the Law of the Sea" in Elise Johansen, Signe Veierud Busch and Ingvild Ulrikke Jakobsen (eds), *The Law of the Sea and Climate Change: Solutions and Constraints* (Cambridge University Press, 2021), 206, 213; Nordic Energy Research (NER), *Offshore Wind in the Nordics: Coexistence and Nature-Inclusive Design* (2023), 8.

13 EC, *Addressing Conflicting Spatial Demands in MSP*, note 10, 8, 12, 13, 14, 32.

14 As illustrated by the Norwegian "petroleum electrification" cases (e.g., Hywind Tampen OWF). In these cases, individual licenses for OWFs are issued under the Petroleum Act, not the Offshore Energy Act. So, little attention is paid to CoE issues. The Petroleum Act (*Petroleumsloven*) (Act No. 72 of 29 November 1996, Norway); Offshore Energy Act (*Havenergilova*) (Act No. 21 of 4 June 2010, Norway); see also Offshore Energy Act Regulations (*Havenergilovforskrifta*) (Regulation No. 1192 of 12 June 2020, Norway); Eirik Finserås and Sigrid Eskeland Schütz, "Offshore Wind Licensing in Norway" in Ignacio Herrera Anchustegui and Tina Soliman Hunter (eds), *Offshore Wind Licensing* (Edward Elgar Publishing, 2024), 127, 134, 135.

15 EC, *The European Green Deal*, COM(2019) 640 final (2019). For OWE see, e.g., EC, *An EU Strategy to harness the potential of offshore renewable energy for a climate neutral future*, COM(2020) 741 final (2020); EC, *European Wind Power Action Plan*, COM(2023) 669 final (2023); Renewable Energy Directive (RED III), note 5. For nature protection and restoration see, e.g., EC, *EU Biodiversity Strategy for 2030: Bringing Nature Back Into Our Lives*, COM(2020) 380 final (2020); Regulation (EU) 2024/1991 of the European Parliament and of the Council of 24 June 2024 on nature restoration and amending Regulation (EU) 2022/869 (hereinafter, Nature Restoration Law), OJ L, 2024/1991, 29 July 2024, ELI: http://data.europa.eu/eli/reg/2024/1991/oj.

16 EC, *EU Biodiversity Strategy for 2030*, note 15, 5; see also, e.g., Articles 1(2), 4(1)(a) of the Nature Restoration Law. See also Conference of the Parties to the Convention on Biological Diversity, Decision 15/4, Kunming-Montreal Global Biodiversity Framework (19 December 2022); HELCOM, *Baltic Sea Action Plan 2021 Update* (20 October 2021) at https://helcom.fi (accessed 26 March 2025).

must be taken on how to co-exist.[17] This clearly implies a need to rethink policy paths, laws, and regulations,[18] and calls for a systematic approach[19] to establish unambiguous policies, planning, and legal frameworks for marine CoE.[20]

Against this background, the theoretical framework of marine CoE is elaborated on and how different regulatory tools function in practice across different legal and planning contexts in the Baltic and North seas is analyzed. This article begins with the theoretical framework for marine CoE. It continues with a discussion of the conceptual approaches to the term and its varieties, which are divided into active marine CoE and passive marine CoE. The benefits of marine CoE are explained and how its fundamental characteristics can be comprehended through its classification is examined. The framework offered here is intended to support conceptual clarity rather than to serve as a comprehensive analytical model. Next, specific regulatory tools that can handle marine CoE are investigated: strategic planning and strategic environmental assessment (SEA), which includes MSP and feasibility planning, then procurement and, finally, permit-granting procedures that involve project planning and environmental impact assessment (EIA), on the one hand, and licenses, on the other. These tools are the offspring of international law, EU/European Economic Area (EEA) regional legislation, and national-level regulation. In this regard, the unique challenges and opportunities offered by these regulatory tools in handling marine CoE—though without claiming to be exhaustive—are explored through examples from specific legislative frameworks and OWE cases in various countries. Here, the perspective of classification of marine CoE is used as a background lens to contextualize the discussion of specific regulatory tools in the Baltic and North seas contexts. Accordingly, the distinction between active marine CoE and passive marine CoE helps interpret how regulatory instruments reflect varying levels of state involvement and proactivity in managing maritime spatial interactions. The article concludes by advocating for cohesive legal frameworks, enhanced policy guidance, and additional research on cumulative effects, prioritizing in spatial planning, and cross-sectoral conflict resolution in increasingly congested marine environments. While a systematic effectiveness evaluation is not presented, the practical suitability of selected instruments is reflected on through a conceptual lens informed by the classification of marine CoE. The novelty of the article lies in its analysis and comparative view of the regulatory tools for marine co-existence, presenting them in the specific marine spatial context of the two sea basins—the Baltic and North seas.

[17] Cf. Erik van Doorn and Sarah Fiona Gahlen, "Legal Aspects of Marine Spatial Planning" in Katherine L. Yates and Corey J. A. Bradshaw (eds), *Offshore Energy and Marine Spatial Planning* (Routledge, 2018), 81; Jessica Weber and Johann Köppel, "Can MCDA Serve Ex-Post to Indicate 'Winners and Losers' in Sustainability Dilemmas? A Case Study of Marine Spatial Planning in Germany" (2022) *Energies* 15, 7654; Anne Marie O'Hagan, "Environmental Considerations in Offshore Wind Licensing" in Herrera Anchustegui and Soliman Hunter (eds), note 14, 41; Jacek Zaucha, Kira Gee, Emiliano Ramieri et al., "Implementing the EU MSP Directive: Current Status and Lessons Learned in 22 EU Member States" (2025) 171 *Marine Policy* 106425; see also Organisation for Economic Co-operation and Development (OECD), *Mainstreaming Biodiversity into Renewable Power Infrastructure* (OECD Publishing, 2024).

[18] Cf. EC, *Best Practice Guidance in Multi-Use Issues and Licensing Procedures*, note 4, 8, 18, 20.

[19] Christie et al., note 11.

[20] See, e.g., European Parliament, *Closing the Blue Loops: Responsible and Sustainable Innovation in the Fields of Water and Ocean*, Study, Panel for the Future of Science and Technology (2024); EC, *Guidance to Member States on Good Practices to Speed Up Permit-Granting Procedures for Renewable Energy Projects and on Facilitating Power Purchase Agreements*, SWD(2022) 149 final (2022).

Theoretical Framework: Conceptual Approach to Marine Co-existence

Owing to its spatial dimension, CoE is intrinsic to the marine environment. However, it is not static. Interactions in marine space among sectors and interests, such as OWE and fisheries, shipping, and nature protection, manifest throughout the OWF life cycle: planning, site characterization, construction, operation, repowering, decommissioning, and end of life.[21]

Depending on the interactions among usages in the marine environment, two primary forms of marine CoE can be distinguished, namely, active marine CoE and passive marine CoE.

Active Marine Co-existence

Active marine CoE refers to direct user–user and user–environment interactions. Depending on the degree of possible connectedness between the user(s), usage(s), or both, four main types of active marine CoE can be distinguished.

The first type is *multi-functional use*, when uses are concurrent, occur in the same location, and share provisioning services (shared crew transports, harbors, or monitoring data) and core infrastructure. Therefore, intrinsic connections exist between the activities (e.g., multi-purpose platforms combining different renewable energies: wind, wave, or tidal).[22]

The second type is *symbiotic use*, which occurs in the same location and timeframe, with common peripheral infrastructure or services (monitoring, environmental data, or safety installations) on sea or land (e.g., OWFs and aquaculture, OWFs and tourism).[23] In this case, in contrast to multi-functional use, the involved activities do not have core infrastructure.

The third type is *co-location*, defined by a moderate to low level of connectivity among marine uses when a distinct correlation may alone be identified within the spatial and temporal aspects, and the overlap is coincidental but not intentional (e.g., OWFs and commercial fisheries).[24]

The fourth type is *subsequent use,* which demonstrates only a connection spatially.[25] This situation arises when a permanent OWF installation remains beyond its operational lifespan and is later repurposed for alternative marine use. This occurs when a coastal state chooses not to dismantle an OWF.[26]

[21] NER, *Accommodating Biodiversity in Nordic Offshore Wind Projects* (2023), 13.

[22] Maximilian Felix Schupp, Martina Bocci, Daniel Depellegrin et al., "Toward a Common Understanding of Ocean Multi-Use" (2019) 6 *Frontiers in Marine Science* article 165, 5–7.

[23] Ibid.

[24] Ibid.

[25] Ibid.

[26] United Nations Convention on the Law of the Sea, adopted 10 December 1982, entered into force 16 November 1994, 1833 UNTS 397 (UNCLOS), in combination with the International Maritime Organization (IMO), *Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the EEZ*, IMO Resolution A.672(16) (IMO, 2008). See for comment Anne Marie O'Hagan, "Maritime Spatial Planning and Offshore Wind Energy" in Herrera Anchustegui and Soliman Hunter (eds), note 14, 60, 71.

Depending on the nature of user-to-user and user-to-environment interactions, the active marine CoE can positively or negatively affect the users involved and their usages, or both.

Positive Active Marine Co-existence

Positive active marine CoE involves interactions among maritime sectors and interests. Positive active marine CoE—represented by win–win solutions—can occur in all four types of CoE and is synonymous with multi-use, a term frequently employed in the MSP field.[27]

In the case of the first three types—*multi-functional use*, *symbiotic use*, and *co-location*—positive active marine CoE means advantages for both (all) interacting parties. These advantages manifest as positive synergies or benefits for at least one sector through advantageous use of shared marine resources, sea areas, infrastructure, technology, or human resources, alongside cost-sharing.[28] Consequently, the anticipated efficiency gain and reciprocal benefits lead to a net benefit from the combination of uses that surpasses the sum of their individual effects.[29] Examples of the benefits of positive active marine CoE can be categorized into four main groups:[30] environmental benefits,[31] technical benefits,[32] economic benefits,[33] and socioeconomic benefits.[34] Regarding *subsequent use*, positive active marine CoE can occur when an OWF

[27] The definition of the analogous term "multi-use" is "the joint use of resources *in close geographic proximity* by either a single user or multiple users" (authors' emphasis). Schupp et al., "Toward a Common Understanding of Ocean Multi-Use," note 22; see also Jacek Zaucha, Martina Bocci, Daniel Depellegrin et al., *Analytical Framework (AF)—Analysing Multi-Use (MU) in the European Sea Basins* (2016, MUSES project); Angela Schultz-Zehden, Ivana Lukic, Joseph Onwona Ansong et al., *Ocean Multi-Use Action Plan* (2018, MUSES project), 10, 30; EC, *Best Practice Guidance in Multi-Use Issues and Licensing Procedures*, note 4, 8–9; Maritime Spatial Planning Assistance Mechanism (European MSP Platform), "Multi-Use and Co-Existence Compendium" at https://maritime-spatial-planning.ec.europa.eu/co-existance-activities-and-multi-use/multi-use-compendium (accessed 5 February 2025).

[28] Summarized: EC, *Addressing Conflicting Spatial Demands in MSP*, note 10, 6, 16; Gee and Mikkelsen, note 3, 5; Schupp et al., "Toward a Common Understanding of Ocean Multi-Use," note 22, 5; Dane H. Klinger, Anne Maria Eikseset, Brynhildur Davíðsdóttir et al., "The Mechanics of Blue Growth: Management of Oceanic Natural Resource Use with Multiple, Interacting Sectors" (2018) 87 *Marine Policy* 356, 358; Martina Bocci, Stephen Joseph Sangiuliano, Alessandro Sarretta et al., "Multi-Use of the Sea: A Wide Array of Opportunities from Site-Specific Cases Across Europe" (2019) 14(4) *PLoS ONE* e0215010.

[29] Bocci et al., note 28.

[30] Summarized from Schupp et al., "Toward a Common Understanding of Ocean Multi-Use," note 22, 5; Bocci et al., note 28; Daniel Depellegrin, Chiara Venier, Zacharoula Kyriazi et al. "Exploring Multi-Use Potentials in the Euro-Mediterranean Sea Space" (2019) 653 *Science of Total Environment* 612, 619, 624, 625; Iñigo Legorburu, Katherine R. Johnson and Stuart A. Kerr, "Multi-Use Maritime Platforms—North Sea Oil and Offshore Wind: Opportunity and Risk" (2018) 160 *Ocean and Coastal Management* 75; EC, *Best Practice Guidance in Multi-Use Issues and Licensing Procedures*, note 4, 13, 15.

[31] E.g., savings in use of space; sustainable production and consumption of seafood products; enhancement of biodiversity; exclusion of commercial fishery—if followed by environmental quality improvement and fish stock regeneration; improved control of cumulative environmental impacts.

[32] E.g., simultaneous production of water and energy; sharing infrastructure, equipment and resources; innovation.

[33] E.g., sharing costs of infrastructure, equipment, and resources; pooling expenses for energy, staff, platform upkeep, safety, and logistics; integration with other services; providing a different revenue stream for industries that are in decline or under restrictions; facilitating projects in maritime areas where they would not otherwise be feasible; diversifying sectors; developing common licensing procedures.

[34] E.g., skill transfer; new job opportunities; minimizing impacts; acceptability of projects.

structure with a nature-based design is left in the sea as an artificial reef beyond its operational lifespan.

An important feature of a positive active marine CoE is its potential presence when OWFs are combined with marine protected areas, incorporate integrated nature-based solutions, and/or exert a positive impact on the environment. For example, in the Dutch Wind Farm Site Decisions for the Borssele and Hollandse Kust (Zuid) Wind Farm Zones, permit holders were required to undertake verifiable initiatives to develop and construct OWFs that enhance the marine ecosystem.[35] In Sweden, first EIA examination of Kriegers Flak[36] in 2006 concluded that fish stocks were unlikely to be adversely affected by the establishment of the OWF and that there could be a positive effect due to reefing provided by the foundations. However, the extent of this was uncertain.

Negative Active Marine Co-existence

Negative active marine CoE highlights the disadvantages one or more parties face in direct user–user and user–environment interactions. These challenges can lead to conflicts arising from environmental impacts, loss of fishing grounds and longer transport routes. Issues like collisions between fishing vessels and OWFs or entanglement with cables raise mortgage, insurance and liability concerns.[37] These matters are often considered barriers to developing a positive active marine CoE.[38]

Negative active marine CoE typically requires mitigation measures (e.g., limitations on fishing, using specific gear types, safety zones, ecological buffer zones, and environmental requirements). In the Norwegian floating OWF Hywind Tampen,[39] the use of fishing gear, such as trawls between the turbines, will not be feasible. The Directorate of Fisheries and the Norwegian Fishermen's Association have advocated for relocating the entire park to an area with less fishing activity or moving its southern end further east to better align with seabed depth quotas that govern trawl fishing. This adjustment would, in turn, reduce conflicts with trawl fisheries. Although this was not the final outcome, nevertheless, as a mitigating measure, it was decided to bury—or, where this is not possible, cover with stones—the export cables from the OWF. The anchor points

[35] A. Hermans, O. G. Bos and I. Prusina, *Nature-Inclusive Design: A Catalogue for Offshore Wind Infra-structure* (2020) Ministry of Agriculture, Nature and Food Quality, 13.

[36] Länsstyrelsen i Skåne, *Beslut om tillstånd enligt 7 kap. 28a § miljöbalken för uppförande och drift av vindkraftspark vid Kriegers flak samt nedläggning av sjökablar m.m. inom Sveriges ekonomiska zon* (2021) Dnr. 521-406-2019 (15 March 2021); Regeringen, *Beslut enligt lagen (1992:1140) om Sveriges ekonomiska zon om vindkraftsparken Kriegers flak* (2022) Diarienr: M1229-2022 and M2018/02437/Me (19 May 2022).

[37] See, e.g., Jaap J. A. Waverijn, "Navigating Legal Barriers to Mortgaging Energy Installations at Sea—The Case of the North Sea and the Netherlands" in Catherine Banet (ed), *The Law of the Seabed* (Brill Nijhoff, 2020) 503; Jivan Dasgupta, Frank Maes, Marijn Rabaut et al., "Key Findings for Multi-Use Pilots in Terms of Legal, Governance, and Insurance" 2023, *Policy Brief* at https://www.h2020united.eu/images/PDF_Reports/20230629_UNITED_Legal_Policy_Brief.pdf (accessed 23 March 2025).

[38] Joanna Przedrzymirska, Jacek Zaucha, Daniel Depellegrin et al., "Multi-Use Concept in European Sea Basins, MUSES Project" (2018) at https://muses-project.com/wp-content/uploads/sites/70/2018/06/D2-6-Final-Report.pdf (accessed 10 January 2025); EC, *Best Practice Guidance in Multi-Use Issues and Licensing Procedures*, note 4, 14, 16.

[39] Norwegian Ministry of Petroleum and Energy (OED), *Hywind Tampen—godkjennelse av endret plan for utbygging og drift av Gullfaks* (8 April 2020) ref. 19/1750-18, Vedlegg, *Oppsummering av KU høringsuttalelser og tilsvar*.

at the edge of the park were also made trawlable. To illustrate the case with mitigating measures concerning birds in Latvia, suggestions include making the following mandatory:

- Equip a turbine or all OWFs with modern technology (radar and/or camera) enabling the OWF to be switched off when approached by, for example, an eagle, stork, or flock of birds, for example, in poor visibility conditions.
- Choose a turbine model with lower noise levels.
- Switch off certain turbines or all OWFs during certain periods.[40]

OWFs could also be equipped with equipment to monitor foreign vessel traffic activity, which would help mitigate conflicts between OWE and national defence.

The interaction between positive active marine CoE and negative active marine CoE can change over the lifetime of OWF since different development stages result in diverse types and amounts of effects.[41] During construction, as well as during the maintenance and decommissioning phases of the OWF, there are risks of accidents when fishing in the area. Conversely, during the operation of the OWF, greater opportunities emerge for active marine CoE.[42] In Sweden, in the EIA of the first examination of Kriegers Flak[43] in 2006, it was noted that fishing would need to be prohibited in the area for safety reasons during the establishment and decommissioning phases. To manage conflicts during the operational phase, the possibility of establishing safety zones around each installation was referenced under the Swedish Exclusive Economic Zone (EEZ) Act.[44] In the United Kingdom, safety zones should be created on a "rolling" basis during the construction, major maintenance and decommissioning phases. This implies that the safety zone will only apply to areas where activities are taking place, thus minimizing disruption to other maritime users and "rolling on" to the next location once activities in a specific area are completed.[45] During the construction phase, safety zones of 500 meters are applied around each

[40] Pretvejs, "*Konference* 'Vēja elektrostaciju ietekme uz Kurzemes piekrasti—tās sociālekonomisko attīstību, vides un kultūrvēsturiskajām vērtībām'" (31 January 2025) at https://pretvejs.lv/pasakumi (accessed 3 February 2025).

[41] Andrew Gill, Steven Degraer, Andrew Lipsky et al., "Setting the Context for Offshore Wind Development Effects on Fish and Fisheries" (2020) 33 *Oceanography* 118, 121.

[42] Gert Van Hoey, François Bastardie, Silvana Birchenough et al., *Overview of the Effects of Offshore Wind Farms on Fisheries and Aquaculture* (EC, 2021).

[43] Länsstyrelsen i Skåne, *Beslut om tillstånd enligt 7 kap. 28a § miljöbalken för uppförande och drift av vindkraftspark vid Kriegers flak samt nedläggning av sjökablar m.m. inom Sveriges ekonomiska zon* (2021-03-15), Dnr. 521-406-2019; Regeringen, *Beslut enligt lagen (1992:1140) om Sveriges ekonomiska zon om vindkraftsparken Kriegers flak* (19 May 2022) Diarienr: M1229-2022 and M2018/02437/Me.

[44] Establishing a safety zone of a maximum of 500 m would take place in relation to each individual turbine and apply to fishing vessels, as well as other vessel traffic. In the consultation that took place with commercial fishers, it emerged that, according to the fishers, safety zones would have a negative impact on economic profitability. However, the OWE company could not accept the solutions proposed by the fishers. See also the Swedish EEZ Act (*Lag (1992:1140) om Sveriges ekonomiska zon*) (Act No. 1140 of 3 December 1992, Sweden).

[45] O'Hagan, "Maritime Spatial Planning and Offshore Wind Energy," note 26, 70; Department of Energy & Climate Change (UK), *Applying for Safety Zones Around Offshore Renewable Energy Installations, Guidance Notes* (2011) at https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/372561/Safety_Zones_DECC_2011.pdf (accessed 25 February 2025).

turbine, while during the operational phase, these are reduced to 50 meters surrounding each turbine.[46]

Passive Marine Co-existence

In the case of passive marine CoE, interactions have a low degree of connectivity between uses. This implies no or little interaction between each other and with minimal conflict or disruption. Passive marine CoE implies that areas remain (deliberately) unplanned, that is, undisturbed, and/or are subject to minimal human intervention to safeguard their ecological significance (such as marine protected areas if they are strict "no-take" areas or "hands-off" ecological zones; e.g., in the Wadden Sea Plan under Trilateral Wadden Sea, no-go zones for industrial activities).

Active marine CoE and passive marine CoE interact so that active marine CoE can help preserve certain marine areas from installations and their associated pressures by establishing maritime industrial zones. This strategy ensures that these areas remain undeveloped while addressing broader societal interests and concerns (e.g., climate goals, nature protection and restoration) from a long-term planning perspective.[47] For example, the Norwegian Southern North Sea II area, which was formally opened for bottom-fixed OWF, partially overlapped with the habitat and spawning grounds of sand eels, a key species in the North Sea ecosystem. These eels are highly site-specific owing to strict seabed requirements, particularly coarse sand for their burrowing, and are vulnerable to physical disturbances of the seabed, as well as noise and vibrations. When announcing the first auction areas for OWE, it was ensured that the announced area did not overlap with their habitat and spawning grounds.[48] Similarly, Poland and Sweden collaboratively decided to establish OWFs on the Middle Bank, while safeguarding additional sandbanks in Sweden to protect harbor porpoises.[49]

Governance Approaches to Marine Co-existence

Harnessing the potential of the marine CoE relies on the methods employed in marine governance. Governance is generally defined as the institutions, structures, and processes that determine who makes decisions, the methods used to make those decisions, who benefits from them, the activities undertaken, the individuals accountable for those activities, and their resulting impact.[50]

[46] Energy Act 2004 (UK) s 95.

[47] Bocci et al., note 28; see also Gee and Mikkelsen, note 3, 4.

[48] OED, *Utlysningsdokumenter for konkurranse om et prosjektområde i Sørlige Nordsjø II* (2022) at https://www.regjeringen.no/contentassets/bd4d260de2c242beb661494550b8d7a3/utlysningsdokumenter-for-konkurranse-om-et-prosjektomrade-i-sorlige-nordsjo-ii.pdf (accessed on 14 December 2024).

[49] Zaucha et al., "Implementing the EU MSP Directive," note 17.

[50] Institutions (laws, policies, rules, norms), structures (decision-making bodies, formal organizations, informal networks), processes (decision-making, policy creation, negotiation of values, conflict resolution). Nathan J. Bennett and Terre Satterfield, "Environmental Governance: A Practical Framework to Guide Design, Evaluation, and Analysis" (2018) 11 *Conservation Letters* 12600.

Marine governance refers to the ways in which individual behaviours and collective activities are shaped in pursuit of public environmental benefits and societal outcomes[51] through both formal regulatory interventions and, more broadly, the institutional and policy frameworks that influence spatial and sectoral interactions at sea. While broader societal dynamics also have an impact on marine outcomes, they fall outside the scope of this analysis, which concentrates on the codified instruments in the context of handling marine CoE.

Various methods exist for applying marine governance structures and processes within which marine CoE can operate. The differences between approaches primarily depend on the extent to which their application relies on governance institutions, structures and processes. Against this background, *how* decisions are made is of enormous importance.[52] Thus, marine governance can be driven through three primary methods: a *top-down approach*, a *bottom-up approach*, and a *hands-off approach*.[53] Each of these methods presents advantages and disadvantages,[54] depending on the specific context.

A *top-down (central government-led) approach* refers to a situation in which central governmental authorities make decisions and transparent policies, regulations, and frameworks are established. This approach includes using a robust scientific foundation, or there may be legal mandates for "formal" consultative involvement or implementation outcomes,[55] such as MSP when its outcomes are pre-determined and predominated by power asymmetries.[56]

The *bottom-up (community and user-led) approach* is based on participatory decision-making, in which different actors, including local stakeholders or communities, are involved in a structured manner. Although decentralized, this approach still requires a governance framework to support and mediate the process. In this case, too, a demonstrable example is MSP, if the parties are involved meaningfully and their opinions are heard and taken into account.[57]

Limited interference by the authorities defines a *hands-off (minimal intervention) approach*. This approach includes an unstructured engagement process where decisions arise spontaneously from stakeholder interactions and complete reliance on self-regulation, market forces, or informal agreements. It also triggers "social responsibility." This approach implies that every sea user, from small-scale fishers to multinational enterprises, has an obligation to evaluate the feasibility of marine CoE in

[51] Cf. ibid.

[52] Ibid.

[53] We acknowledge that there may be additional approaches, but we put forward the three methods as the main ones, while the others overlap with or derive from them.

[54] Peter J. S. Jones and Stephen D. Long, "Analysis and Discussion of 28 Recent Marine Protected Area Governance (MPAG) Case Studies: Challenges of Decentralisation in the Shadow of Hierarchy" (2021) 127 *Marine Policy* 104362.

[55] Jon C. Day, "Key Principles for Effective Marine Governance, Including Lessons Learned After Decades of Adaptive Management in the Great Barrier Reef" (2022) 9 *Frontiers in Marine Science* 972228.

[56] Ralph Tafon, Fred Saunders and Michael Gilek, "Re-Reading Marine Spatial Planning Through Foucault, Haugaard and Others: An Analysis of Domination, Empowerment and Freedom" (2019) 21 *Journal of Environmental Policy & Planning* 754.

[57] See, e.g., Arturs Caune, Jānis Kirkovalds, Armands Puzulis et al., *Stakeholder Involvement in Long-term Maritime Spatial Planning: Latvian Case* (Baltic LINes, 2017).

their particular contexts since future marine CoE development will only occur through coordinated efforts at all levels involving all parties concerned.[58]

However, in practice, no clear-cut boundary exists between these approaches, and their application can be combined.[59] Owing to their intrinsic characteristics, both the *bottom-up approach* and the *hands-off approach* may contribute to developing best practices for positive active marine CoE opportunities (e.g., the North Sea Agreement in the Netherlands or the Offshore Wind Forum in Norway[60]). This statement also implies that the state is not required to limit its function exclusively to being a passive facilitator of bottom-up techniques or a centralized controller of top-down approaches.[61] It also includes leaving certain aspects for self-regulation. A more *hands-off approach*, through collaboration between stakeholders, industry, and the scientific community, might be the most effective if innovative marine CoE methods need to be developed and implemented. This is the case, for example, with the application of nature-based solutions to OWFs, which require in situ collaboration, long-term experimentation, and monitoring activities[62] to promote active marine CoE. In the case of scaling up positive active marine CoE, additional examples are joint pilot cases, data sharing between research and industry actors, and exemplary cost-sharing and/or cooperation agreements between the involved industry representatives.[63] For example, in Norway, such an informal agreement would be a "principles"-type document drafted in cooperation between the fisheries and private OWE developers. These principles state that development of OWE:

- should meet society's need for renewable energy while considering environmental and fisheries interests (broader societal interests and concerns);
- should avoid important fishing or spawning areas and consider migration routes for key stocks (preventing of disadvantages, namely, negative active marine CoE); and
- should ensure that areas proposed or opened for OWE are utilized as efficiently as possible (promoting of mutually beneficial solutions, namely, positive active marine CoE).[64]

These principles are supplemented by a guide to the development and operation of OWE projects by reference to when and how the industries concerned should engage in dialogue and collaborate on various activities.[65]

[58] Schupp et al., "Toward a Common Understanding of Ocean Multi-Use," note 22, 9.

[59] Peter J. S. Jones, "Marine Protected Areas in the UK: Challenges in Combining Top-Down and Bottom-Up Approaches to Governance" (2012) 39 *Environmental Conservation* 248.

[60] NER, *Offshore Wind in the Nordics*, note 12, 38.

[61] Jones and Long, note 54.

[62] Juan Carlos Farias Pardo, Magnus Aune, Christopher Harman et al., "A Synthesis Review of Nature Positive Approaches and Coexistence in the Offshore Wind Industry" (2025) 82(4) *ICES Journal of Marine Science* fsad191, 10.

[63] Schupp et al., "Toward a Common Understanding of Ocean Multi-Use," note 22, 6, 7, 9.

[64] In June 2023, Offshore Norway, the Norwegian Fishermen's Association, and Fiskebåt presented an agreement on principles for coexistence between offshore wind and fisheries. Offshore Norge, *Prinsipper for sameksistens mellom havnæringer* (2023) at https://www.offshorenorge.no/contentassets/2a9710414f0349b99647e685bc431cd7/prinsipper.pdf (accessed 14 December 2024).

[65] Offshore Norge, *Dreiebok* (2023) at https://www.offshorenorge.no/om-oss/nyheter/2023/12/dreiebok (accessed 14 December 2024).

Regulatory Tools on Co-existence for Offshore Wind Farms

The following discussion on relevant regulatory tools proceeds in the context of handling the marine CoE in the Baltic and North seas: strategic planning and SEA (strategic environmental assessment) , which encompasses MSP (maritime spatial planning) and feasibility planning, followed by procurement and, ultimately, permit-granting procedures that involve project planning and EIA (environmental impact assessment), on the one hand, and licenses, on the other. These tools emerge from international law, EU/EEA regional legislation, and national-level regulation, with the United Nations Convention on the Law of the Sea (UNCLOS)[66] serving as the clear departure point. The different maritime jurisdictional areas under UNCLOS confer or impose various rights and obligations on states when implementing OWE projects and affect the permit-granting process for OWE projects and their marine CoE opportunities. Thus, freedom of navigation, fishing, laying subsurface cables and pipelines, and rights of transit passage feature among the factors shaping the possibilities for marine CoE.

Against this background, the unique challenges and opportunities offered by these regulatory tools in handling marine CoE are—though without claiming to be exhaustive—explored through examples from specific legislative frameworks and OWE cases in various countries.

Strategic Planning and Strategic Environmental Assessment

SEA forms part of strategic planning and applies to plans or programs "which are likely to have significant environmental effects"[67] across various sectors (e.g., fisheries, energy, water management, land use planning). It sets "the framework for future development consent of projects" under the EIA Directive.[68] The SEA process holistically takes into account the cumulative effects of plans and programs, as well as broader societal interests and concerns (e.g., national defence, energy security, climate goals, nature protection and restoration). In doing so, SEA feeds strategic decision-making.[69] Since SEA, as a component of a hierarchy of environmental assessments, links to EIAs conducted at the project level, SEA-produced plans are re-evaluated and refined further through EIA procedures.[70] The SEA process usually involves scoping, evaluating alternatives, drafting an environmental report, and public consultation, alongside mitigation and monitoring measures, with the report's conclusions considered in finalizing plans.[71] These stages offer abundant opportunities for considering marine CoE and providing its pre-conditions. In effect, SEA serves as the trigger mechanism

[66] Note 26.

[67] Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (hereinafter, SEA Directive), OJ L 197, 21 July 2001, ELI: http://data.europa.eu/eli/dir/2001/42/oj, Art 3(1).

[68] Ibid, Art 3(2)(a).

[69] European MSP Platform, "Strategic Environmental Assessment" at https://maritime-spatial-planning.ec.europa.eu/faq/strategic-environmental-assessment-sea (accessed 23 October 2024).

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

[71] SEA Directive, note 67, Arts 2(b), 8.

for both active marine CoE as an interaction between maritime sectors and interests that yield win-win solutions and passive marine CoE aimed at safeguarding the ecological significance of unplanned areas.

Another situation arises when plans and programs have been identified as necessitating an Appropriate Assessment (AA) of their impact on protected areas under EU nature legislation.[72] The AA can be streamlined with both SEA and EIA. The EEA agreement does not encompass nature protection, so Norway is not bound by Natura 2000 but has a somewhat similar evaluation under its Nature Diversity Act.[73]

Depending on its outcome, AA plays a unique role in designing passive marine CoE and active marine CoE areas. Special Protection Areas under the Birds Directive and Special Areas of Conservation under the Habitats Directive constitute the Natura 2000 network of protected sites.[74] According to Article 6(3) of the Habitats Directive, any plan or project not directly related to managing a Natura 2000 site but likely to significantly impact it, either independently or in conjunction with other plans or projects, has to undergo an AA regarding its implications for the site's conservation objectives. The project cannot be approved if negative impacts on the integrity of any Natura 2000 site cannot be excluded. The sole exemption occurs when a project is deemed essential for "imperative reasons of overriding public interest," which can be of a social or economic nature, where no alternatives exist, and all requisite compensatory measures are implemented to safeguard the overall coherence of Natura 2000.[75] If the site in question contains a priority natural habitat type and/or a priority species, the only considerations that may be addressed are those pertaining to human health or public safety, to significant environmental benefits, or, following a Commission opinion, to other imperative reasons of overriding public interest.[76] If none of these reasons exist, the site might be used for ecological purposes (passive marine CoE). Otherwise, it can be considered for direct engagement among maritime sectors and interests, characterized by mutually beneficial solutions (positive active marine CoE).

Maritime Spatial Planning

MSP is the way to offer a systematic framework and comprehensive planning process for sustainable management of marine space.[77] This includes safeguarding the marine environment through an ecosystem-based approach in order to achieve ecological,

[72] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (hereinafter, Habitats Directive) OJ L 206, 22 July 1992, ELI: http://data.europa.eu/eli/dir/1992/43/2025-07-14, current consolidated version: 14/07/2025; Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (Codified version) (hereinafter, Birds Directive), OJ L 20, 26 January 2010, ELI: http://data.europa.eu/eli/dir/2009/147/2019-06-26, current consolidated version: 26/06/2019; SEA Directive, note 66, Art 3(2)(b); see also European Commission, *Guidance Document on Wind Energy Developments and EU Nature Legislation* (2020).

[73] Act on the Management of Natural Diversity (Biodiversity Act) (*Lov om forvaltning av naturens mangfold* [*naturmangfoldloven*]) (Act No. 100 of 19 June 2009, Norway).

[74] Habitats Directive, note 72, Art 3(1).

[75] Ibid, Art 6(3).

[76] Ibid, Art 6(4).

[77] Charles Ehler and Fanny Douvere, *Marine Spatial Planning: A Step-by-Step Approach toward Ecosystem-Based Management*, IOC Manual and Guides No. 53, ICAM Dossier No. 6 (Intergovernmental Oceanographic Commission and Man and the Biosphere Programme, UNESCO, 2009); Charles Ehler and Fanny Douvere, *Visions for a Sea Change: Report of the First International Workshop on Marine Spatial Planning* (Intergovernmental Oceanographic Commission and Man and the Biosphere Programme, UNESCO, 2007).

economic, and social objectives. MSP prevents and mitigates conflicts and balances competing interests, serving as the fundamental framework for decision-making in sectoral planning and the authorization of maritime projects and activities, especially for developing permanent infrastructures[78] such as OWFs.

The practical expression of MSP is preparing an adaptive, iterative maritime spatial plan (MSPlan) that includes the spatial and temporal distribution of current and planned uses. This plan has to undergo the SEA procedure. Consequently, the MSPlan must evaluate the effects of various activities on all users as well as on the environment and assess the feasibility of their CoE,[79] in addition to the potential repercussions of such decisions (e.g., displacement of activities).[80] As a result, the MSP offers an opportunity to envisage specific mechanisms and measures (e.g., in the Netherlands[81]) and exerts an impact on both active marine CoE of direct user–user and user–environment interactions and passive marine CoE when certain areas are intentionally left unmanaged to preserve their ecological importance. In Norway, the MSP Directive is not implemented under the EEA agreement, so it does not have legislation on MSP (instead, it uses "opening of areas" for OWE that could be considered a hybrid between EU MSP and feasibility studies at the strategic level).

Several current MSPlans do not highlight marine CoE. However, some explicitly support it, albeit using different terminology (e.g., "multiple use" in Belgium,[82] "combined use" in Estonia,[83] "coexistence" in Sweden[84]). The Estonian MSPlan provides specific guidelines and conditions for the marine uses it covers, including those based on a marine CoE perspective for the spatial development of the marine area.[85] Furthermore, in some MSPlans, OWE development sites are designated as priority areas (e.g., in Latvia) and/or reserved areas (e.g., in Germany[86]). The implications of such an approach can differ. For instance, in Latvia, OWE projects can only be implemented in designated priority areas of the MSPlan, and no other use can take place in priority areas, thereby hindering direct user–user and user–environment interactions, namely, active marine CoE, whether positive or negative. In contrast, in Germany, the identification of priority or reservation areas does not imply that the corresponding

[78] Bundesamt für Seeschifffahrt und Hydrographie (BSH, Germany), *Raumplanung in der deutschen ausschließlichen Wirtschaftszone (AWZ): Begleitdokument zum Raumordnungsplan AWZ 2021* (BSH, 2023), 7.

[79] See also MSP Directive, note 3, recital 19, Art 5(1).

[80] O'Hagan, "Maritime Spatial Planning and Offshore Wind Energy," note 26, 64.

[81] Government of the Netherlands, *North Sea Programme 2022–2027: Annex to the National Water Programme 2022–2027* (2022).

[82] Marine Spatial Plan for 2020–2026 (Royal Decree establishing the marine spatial planning for the period 2020 to 2026 in the Belgian sea-areas) (2019) at https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/msp-2020-englishtranslation.pdf (accessed 25 November 2024).

[83] Estonian Maritime Spatial Plan (2022) at https://mereala.hendrikson.ee/dokumendid/Eskiis/Estonian_MSP_main-solution_ENG.pdf (accessed 3 December 2024).

[84] Maritime Spatial Plans for Skagerrak/Kattegat, Baltic Sea and Gulf of Bothnia (2022) at https://www.havochvatten.se/en/eu-and-international/marine-spatial-planning/marine-spatial-plans.html (accessed 7 February 2025).

[85] Estonian Maritime Spatial Plan, note 83.

[86] German Government, *Spatial Plan for the German Exclusive Economic Zone in the North Sea and in the Baltic Sea. Annex to the Spatial Planning Ordinance for the German Exclusive Economic Zone in the North Sea and in the Baltic Sea*, 19 August 2021 [unofficial translation], Annex Volume to the Federal Law Gazette Part I No. 58, 26 August 2021 (G5702).

use or function within the planning area cannot occur beyond these designated zones.[87] In Poland, additional activities, referred to as "permitted functions," may occur in areas designated for OWE as long as they do not disrupt the core objective of renewable energy production.[88]

As a result, MSP—along with permit-granting procedures—plays a role in controlling market access at sea[89] and, in theory, should facilitate informed decisions by providing investors and stakeholders with transparency and predictability regarding the licensing of activities.[90] However, this predictability can be affected by the regulatory approach concerning the choice of OWF location in MSP and comparable processes, as well as the selection of developers, resulting from this regulatory strategy.[91] For example, in Sweden, under Chapter 1, Section 2 of the Planning and Building Act,[92] municipalities are responsible for creating comprehensive plans for land and water areas, including the territorial sea, whereas the state oversees the use of the territorial sea from 1 NM off the baseline and within the EEZ. However, there is no legal obligation to coordinate municipal and national plans. The government emphasizes MSP's importance in coordination between authorities and municipalities.[93] Still, it is unclear how these plans can be integrated, how conflicts of different uses can be avoided, and how marine CoE can be promoted. In addition, unlike many other countries (e.g., Denmark, Germany, Latvia, Lithuania, Poland), the Swedish state has been relatively restrained in steering offshore activities to a particular area. Instead, individual developers have primarily taken the initiative to develop a specific location for OWE production (the so-called open-door process, which is deemed to pose more significant risks for developers compared to the government-led process[94]). The fact that developers cannot be given the exclusive right to investigate an area's potential for OWE production and apply for permits entails unnecessary wear and tear on marine areas, uncertainty, and costs for stakeholders and society. In 2023, the Swedish government rejected a further extension of a permit to construct and operate the Stora Middelgrund OWF in the Kattegat, on the west coast of Sweden,[95] since nature conservation, outdoor recreation,

[87] However, in such a case the OWE use/function must prevail over all other competing uses, while the priority area is designated for it or while it is afforded more significance in the reservation area when evaluating competing uses. BSH, note 78, 9.

[88] Maritime Spatial Plan for Polish Sea Areas on a Scale of 1:200,000 (2021) at https://polishmsp.eu/pom (accessed 12 March 2025).

[89] van Doorn and Gahlen, note 17, 82.

[90] Cf. Das Neves, note 12, 226; Maes, note 70, 798.

[91] E.g., comparative research of the North Sea and Baltic Sea coastal states reveals three major regulatory approaches to OWF location selection: open-door approach, zonal approach, and centralized location choice. Ceciel Nieuwenhout, "Developing Offshore Wind Farms—A Comparison and Analysis of the Legal and Governance Frameworks of the North Sea Coastal States" (2023) 10 *European Journal of Comparative Law and Governance* 518, 522–526.

[92] Planning and Building Act (*Lag* (2010:900) *om planering och byggande*) (Act No. 900 of 1 July 2010, Sweden).

[93] Bill for the Marine Spatial Planning Ordinance (*Hushållning med havsområden*) (Prop. 2013/14:186 of 13 March 2014, Sweden).

[94] NER, *Offshore Wind in the Nordics: Coexistence and Nature-Inclusive Design*, note 12, 19, 38.

[95] Originally granted in 2006 and extended in 2014. Länsstyrelsen i Hallands Län, *Beslut om tillstånd enligt 7 kap. 28a § miljöbalken för uppförande och drift av vindkraftspark vid Stora Middelgrund* (19 October 2022), Dnr. 3406-2021; Länsstyrelsen i Hallands Län, *Beslut om tillstånd enligt 7 kap. 28a § miljöbalken för uppförande och drift av vindkraftspark vid Stora Middelgrund* (27 January 2023), Dnr. 8121-2021; Regeringen, *Beslut enligt lagen (1992:1140) om Sveriges ekonomiska zon om vindkraftsparken Stora Middelgrund* (27 July 2023) KN2023/01037.

commercial fishing, and communications/maritime transport were found to promote long-term management of public resources in a more appropriate manner than OWF. The fact that the planned OWF entails a minor addition of fossil-free electricity production compared to other OWFs planned on the west coast was also given as a reason for rejection.

Ultimately, within the framework of regional transboundary cooperation, although MSP is still in its early stages, it holds great potential for promoting marine CoE more broadly at the sea basin scale. It addresses both direct user–user and user–environment interactions (active marine CoE) and unplanned areas aimed at safeguarding their ecological significance (passive marine CoE) in a transnational context. This can be achieved by harnessing the international and regional systems and opportunities they offer, along with the framework and the rights and duties provided by both the Espoo Convention[96] and the Kyiv Protocol,[97] which mandate environmental assessments if a plan, program, or project is expected to bring to bear significant transboundary impact on another affected country.

Feasibility Planning

Feasibility planning is a government-led process to assess an OWE project's environmental, technical, and economic viability. In this regard, it can be concluded that countries that have separate OWE sectoral plans provide this kind of feasibility planning at the strategic level. For example, the Dutch Offshore Wind Energy Roadmap, with its "area passports" outlining the priorities for the shared use of OWFs,[98] is one such illustration. In the Norwegian case, for this purpose, "opening of areas" is used to issue licenses under the Offshore Energy Act. This is a strategic opening process with a broad view, including an SEA and evaluation of suitable OWE areas, with all interests taken into account and assessing alternative areas and considering them together to open up areas with few conflicts.[99] In Germany, the Federal Maritime and Hydrographic Agency undertakes preliminary investigations for locations appropriate for the establishment and functioning of OWFs and includes them in the Site Development Plan that serves as the basis for a competitive auction.[100] A similar system operates in Denmark, where Energinet—the Danish transmission system operator—carries out an SEA and baseline study.[101] On the basis of the preliminary study report, the Danish Minister of Climate, Energy, and Utilities (the de facto Energy Agency) ensures that

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

[97] Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context, adopted 21 May 2003, entered into force on 11 July 2010, 2685 UNTS 140.

[98] The zoning in this area passport indicates the available space within a OWF for shared use. The following areas are not available for shared use: shipping lanes, maintenance and safety zones surrounding platforms, wind turbines, infield cables, and designated supply routes for shipping. The residual space is designated for shared use. Noordzeeloket, "Free Passage and Shared Use" at https://www.noordzeeloket.nl/en/functions-use/offshore-wind-energy/free-passage-shared-use (accessed 15 January 2025).

[99] Finserås and Schütz, note 14, 134.

[100] O'Hagan, "Maritime Spatial Planning and Offshore Wind Energy," note 26, 75.

[101] Birgitte Egelund Olsen and Bent Ole Gram Mortensen, "Offshore Wind Licensing in Denmark" in Herrera Anchustegui and Soliman Hunter (eds), note 14, 84, 91.

the site selected is approved, so that this study serves as a basis for a later tender developed by the Energy Agency.[102]

If the interests concerning other usages are taken into account, this kind of sectoral planning by streamlining the assessment process (namely, only significant environmental effects are studied) can promote direct engagement among maritime sectors and interests, characterized by mutually beneficial solutions (positive active marine CoE) and prevent disadvantages for one or more parties in these interactions (negative active marine CoE). Additionally, this sectoral planning by warning regulators of data deficiencies allows them to initiate a research program and/or strategic monitoring before making licensing decisions.[103] These actions can serve as a proper "lighthouse" in determining pre-conditions for positive active marine CoE, leading to beneficial solutions for sectors and interests involved, on one hand, and passive marine CoE, denoting intentionally left unplanned areas to preserve their ecological importance, on the other.

Procurement

MSP and/or feasibility planning is usually followed by the procurement stage, which includes three procedures: pre-qualification, tendering, and tender award (site allocation).

Historically, administrative allocation of permits was the conventional approach for approving OWE projects until the advent of alternative methods such as administrative tender procedures and auction tendering (competitive bidding).[104] The main difference between administrative tender procedures and auction tendering is that the government sets the price in administrative tender procedures, and other non-price factors are dominant. In auction tendering, it is competitive bidding (e.g., the lowest subsidy required) or negative bidding (bidding below zero in subsidy-free auctions, e.g., the first OWE auction in Lithuania in 2023[105]) and, optionally, can include non-price criteria with less weight.

Government-led auctions are considered to be the most efficient mechanism for implementing OWFs both in Europe and worldwide. Consequently, OWE has experienced its most significant growth in markets that have implemented government-led auctions (Denmark, the Netherlands, and the United Kingdom).[106]

[102] Ibid. Before the Danish open-door procedure was abolished in June 2023, following months of suspension due to inconsistencies with EU law, feasibility studies on the framework of this approach took place at the project level only. ELS Analysis, *Tendering Procedures for Offshore Wind: A Comparative Analysis* (2024).

[103] O'Hagan, "Environmental Considerations in Offshore Wind Licensing," note 17, 59; see also Olsen and Mortensen, note 101, 84, 91.

[104] ELS Analysis (note 102).

[105] WindEurope, *Wind Energy in Europe: 2023 Statistics and the Outlook for 2024–2030* (2023), 25.

[106] ELS Analysis, note 102.

Some countries (e.g., Latvia,[107] Norway,[108] and Poland[109]) use or are planning to use a combination of administrative tender procedures and auction tendering. To remove the motivation for a decision based solely on price, multi-criteria auctions are used incorporating non-price criteria,[110] using a mixture of both quantitative and qualitative assessments.[111] These criteria might include, for example, "quality, ability to deliver the project on time, responsible business conduct, cyber-security and data security, contribution to resilience, environmental sustainability or innovation."[112] Lately, the governments of France, the Netherlands, Scotland, Germany, and Belgium have been evaluating the implementation of non-price factors, especially in their OWF auctions.[113] Furthermore, in the dominant auction-based systems cases, pre-qualification criteria are applied. These criteria are often limited to financial and technical requirements,[114] thereby conditionally undermining greater diversity and wider participation from various market players,[115] which could, among other things, offer more innovative solutions to promote CoE.[116] For example, in Norway, in Phase 1 of Southern North Sea (*Sørlige Nordsjø*) II, such minimum requirements as "sustainability" and "positive ripple effects" were applied.[117] In light of Article 26 of the Net-Zero Emissions Act,[118] administrative tendering is expected to be largely phased out, with auction tendering (potentially incorporating non-price criteria) becoming the standard mechanism for renewable energy deployment in the EU.

Undoubtedly, non-price criteria that can be used for pre-qualification and tender awards is one important way to promote positive active marine CoE—interaction between maritime sectors and interests, represented by win–win solutions—regionally,

[107] Ministry of Smart Administration and Regional Development (Latvia), I*Jūras plānojuma starpposma novērtējums* (30 November 2023) 23-TA-2929.

[108] NER, *Offshore Wind in the Nordics*, note 12, 20; see also NER, *Accommodating Biodiversity*, note 21, 20; S. S. Ellensen, "Offshore Wind Development and Regulation Norway" 24 April 2024, *DLA Piper Norway* at https://norway.dlapiper.com/en/news/offshore-wind-development-and-regulation-norway (accessed 5 February 2025).

[109] ELS Analysis, note 102.

[110] Governments are now permitted to assign up to 30 percent of the total weighting to non-price criteria in their auction evaluations. EC, *Guidelines on State Aid for Climate, Environmental Protection and Energy 2022* (2022/C 80/01), OJ C 80, 18 February 2022, 1; see also WWF, *Non-Price Criteria in Offshore Wind Prequalifications and Auctions* (11 September 2024) at https://media.wwf.no/assets/attachments/Non-price-criteria-in-offshore-wind-prequalifications-and-auctions-110924.pdf (accessed 27 January 2025).

[111] Commission Recommendation (EU) 2024/1344 of 13 May 2024 on auction design for renewable energy (hereinafter, Commission Recommendation 2024/1344), OJ L 2024/1344, 21 May 2024, ELI: http://data.europa.eu/eli/reco/2024/1344/oj, [9], [14].

[112] Ibid, [6].

[113] WindEurope, *WindEurope Position Paper on Non-Price Criteria in Auctions* (13 April 2022) at https://windeurope.org/wp-content/uploads/files/policy/position-papers/20220413-WindEurope-Position-paper-non-price-criteria-in-auctions.pdf?20220520b (accessed 23 January 2025).

[114] John Paterson, "Offshore Wind Licensing in the United Kingdom" in Herrera Anchustegui and Soliman Hunter (eds), note 14, 171, 179; NER, *Offshore Wind in the Nordics*, note 12, 19.

[115] ELS Analysis, note 102.

[116] Cf. NER, *Offshore Wind in the Nordics*, note 12, 49; see also Commission Recommendation 2024/1344, recital 10, [6]–[8], [12], [13], [15]–[18].

[117] Ellensen, note 108.

[118] Regulation (EU) 2024/1735 of the European Parliament and of the Council of 13 June 2024 on establishing a framework of measures for strengthening Europe's net-zero technology manufacturing ecosystem and amending Regulation (EU) 2018/1724, OJ L, 2024/1735, 28 June 2024, ELI: http://data.europa.eu/eli/reg/2024/1735/oj. Article 26 shall apply from 30 December 2025.

using harmonization of a country's auction design principles through existing structured dialogue fora.[119]

Permit-Granting Procedures

The permit-granting procedure ensures compliance with legal, environmental, and technical requirements before construction. This procedure results in the grant of rights, typically referred to as a license and/or permit.[120] As an essential project planning phase, an EIA is usually carried out, and its results are then used to include certain license conditions, which in turn determine the specific requirements for marine CoE provision.

Project Planning and Environmental Impact Assessment

EIA at the project level is used to assess its direct and indirect effects on a range of factors that comprise the environment.[121] EIA offers a detailed and targeted approach throughout the phases of an OWF's lifetime: planning, site characterization, construction, operation, repowering, decommissioning,[122] and end of life. As a rule, project-specific decisions resulting from EIA must align with the overarching MSPlan and its objectives[123] or other SEA processes when "opening of areas" for OWE (e.g., in Norway).

Overall, the EIA processes are relatively similar across many countries, aligning with the EU legal framework through the following steps[124]: screening, scoping, baseline studies, submission of an EIA report, assessment, and decision-making. Screening determines whether a project has significant environmental effects and requires an EIA; scoping identifies the information to be submitted; and baseline studies gather initial data on the receiving environment. The EIA report containing all relevant information is submitted to the competent authority, which—after assessing the project's potential impacts—decides whether to grant development consent, often incorporating mitigation measures and environmental monitoring requirements. This development consent is a decision "which entitles the developer to proceed with the project"[125] and commonly results in requirements outlined in licenses. For example, in Latvia, the

[119] E.g., regional High-level Groups such as North Sea Energy Cooperation (NSEC) and Baltic Energy Market Interconnection Plan (BEMIP). Commission Recommendation 2024/1344, recitals 7, 8, 10 and [4], [6], [7], [11], [12], [13], [15].

[120] Cf. Ignacio Herrera Anchustegui and Tina Soliman Hunter, "Geographical, Technological, and Legal Perspectives of Offshore Wind Energy" in Herrera Anchustegui and Soliman Hunter (eds), note 14, 2, 10.

[121] Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, OJ L 26, 28 January 2012 (hereinafter, EIA Directive), as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, OJ L 124, 25 April 2014 (hereinafter, EIA Directive, as amended by Directive 2014/52/EU).

[122] Directive 2011/92/EU, as amended by Directive 2014/52/EU, Annex 2(A) [1(a)], Annex IV [1(b), 5(a)]; see also Directive 2014/52/EU, recital 22; Rebecca Hall, Eva Topham and Elda João " Environmental Impact Assessment for the ecommissioning offshore wind Farms (2022) 165 *Renewable and Sustainable Energy Reviews* 112580.

[123] O'Hagan, "Maritime Spatial Planning and Offshore Wind Energy," note 26, 63.

[124] O'Hagan, "Environmental Considerations in Offshore Wind Licensing," note 17, 44.

[125] EIA Directive, note 121, Art 1(2)(c).

competent authority establishes requirements for all wind farms to ensure the monitoring of birds and bats during pre-construction, construction, and operation.[126] Such a monitoring plan must be agreed upon with the Nature Conservation Agency. If, during its implementation, it is discovered that more damage (i.e., loss of life) occurs during operation than anticipated, a damage reduction plan must be developed and executed. While no OWFs have yet undergone an EIA in Latvia, they are unlikely to be exceptions to these requirements.

However, the effectiveness of EIA may be limited by its scope. On the one hand, EIA is suitable for marine CoE as it can integrate different aspects of the multilayered marine environment where the OWF project is to be implemented. On the other hand, challenges arise if the legal framework comprehensively covers impacts on the abiotic and biotic environment and on human health,[127] while socioeconomic impacts are not adequately or sufficiently addressed (e.g., in Latvia).[128] These socioeconomic impacts can be crucial for identifying cross-sectoral clashes and synergies among sectors such as OWE and fisheries. In this regard, a notable example is Norway, where environmental and social impact assessments are conducted for OWE projects, considering implications for various business interests.[129] In Finland, too, based on the requirements of the Espoo Convention, socioeconomic assessment is considered to be an integral part of EIA.[130]

Licenses

The permit process involves granting various licenses for an OWE project. In some jurisdictions, the issuance of an access license automatically confers an operating license, consolidating the two permits into a single decision[131] (single-permit system), as seen in the Netherlands. Norway exemplifies the necessity of acquiring two distinct area licenses prior to the commencement of a project[132] (two-permit system). The three-step permit procedure typically consists of

1. a license to carry out preliminary investigations;
2. a license to establish the OWF (which may include grid connection approval); and
3. a license to exploit wind power for a specified duration, along with authorization for electricity generation or the operation of the OWF.

[126] Pretvejs, note 40.

[127] EIA Directive, as amended by Directive 2014/52/EU, note 121, Art 3(1), Annex III [1(g)], Annex IV [4], [5(d)]; see also Directive 2014/52/EU, recitals 1, 22 and 41.

[128] Socioeconomic factors include human health and well-being, cultural and natural heritage, aesthetics, demographic change, quality of life, employability, income, financial protection, adequate infrastructure and access to services, real estate, and family life. Leila Neimane, "Ietekmes uz vidi novērtējuma tiesiskā regulējuma aktuālas problēmas" (Latvijas Universitāte, 2019), 228–229.

[129] NER, *Accommodating Biodiversity*, note 21, 20; see also NER, *Offshore Wind in the Nordics*, note 12, 37.

[130] Neimane, note 128, 229.

[131] Anchustegui and Hunter, note 120, 12; see also approach with a superficies license in Estonia. Ministry of Climate (Estonia), "The Riigikogu Passed the Act Accelerating the Establishment of Offshore Wind Farms and Solar Farms" (29 May 2024) at https://kliimaministeerium.ee/en/uudised/the-riigikogu-passed-the-act-accelerating-the-establishment-of-offshore-wind-farms-and-solar-farms (accessed 26 September 2024).

[132] Anchustegui and Hunter, note 120, 11.

Such a system is in place in Denmark. In the United Kingddom, based on Crown property rights, leases are granted instead of licenses.[133] In Finland, permit processes vary by region; similarly, as in Sweden, sites within Finnish territorial seas and the EEZ are subject to distinct permit requirements.[134] The number of permit stages for OWE projects could be relevant for expedited and streamlined licensing procedures, along with a one-stop shop requirement in line with amendments to the Renewable Energy Directive (RED III)[135] regarding compliance with the new requirements,[136] although these legislative changes also highlight the importance of CoE,[137] including marine CoE, more specifically.

The conditions resulting from feasibility studies and EIA for OWE project are reflected in the licenses. These conditions can comprehend

- fixed term and renewal conditions,[138]
- decommissioning obligations, including funding and technology,
- adaptive management (including monitoring) provisions,
- transferability and termination clauses, and
- a mandate to marine CoE with other sea uses, including an obligation to allow for new sea users,[139] and requirements for project design.

To prevent negative active marine CoE, which can result in disadvantages for one or more parties in direct user–user and user–environment interactions, licenses often stipulate

- environmental requirements,
- requirements for marking wind turbines to ensure safe navigation,
- lighting systems to minimize impacts on nocturnal birdlife, and
- coordination with fisheries to minimize disruption to fishing grounds.

To foster a positive active marine CoE through direct engagement among maritime sectors and interests characterized by mutually beneficial solutions, licenses may also incorporate requirements for nature-development solutions (nature-inclusive design).[140]

[133] Paterson, note 114.

[134] NER, *Offshore Wind in the Nordics*, note 12, 20; NER, *Accommodating Biodiversity*, note 21, 23–25.

[135] E.g., Renewable Energy Directive (RED III), note 5, Arts 15b, 15c.

[136] See also EC, Commission Recommendation (EU) 2024/1343 of 13 May 2024 on speeding up permit-granting procedures for renewable energy and related infrastructure projects, OJ L, 2024/1343, 21 May 2024, ELI: http://data.europa.eu/eli/reco/2024/1343/oj; Commission Staff Working Document, *Guidance to Member States on Good Practices to Speed Up Permit-Granting Procedures for Renewable Energy and Related Infra-Structure Projects*, SWD(2024) 124 final (13 May 2024). Accompanying the document Commission Recommendation on speeding up permit-granting procedures for renewable energy and related infrastructure projects, C(2024) 2660 final (13 May 2024).

[137] Renewable Energy Directive (RED III), note 5, Art 15b(2).

[138] E.g., in Norway the validity of a license is for 30 years unless the licensee seeks and obtains a renewed license in the form of a life extension clause for repowering. Offshore Energy Act Regulations (*Havenergilovforskrifta*) (Regulation No. 1192 of 12 June 2020, Norway) s 8.

[139] NER, *Offshore Wind in the Nordics*, note 12, 36, 37.

[140] Ibid, 3.

In this context, it is important to determine whether the activity has been added to existing or "historic" activity or if the involved activities are developed together from the project design phase.[141] In the latter case, it is normative to provide the possibility of a license for at least two activities, which could also entail a mutually agreed CoE plan from the sectors involved to be submitted to the competent authority prior to the license application.[142] This is not currently the case in Latvia, where existing regulations do not allow for the combination of multiple marine uses within one single license area (for example, OWFs and aquaculture).[143] In the Netherlands, however, such "shared use" (nature development, food, energy) is feasible, although it may require an additional permit under the Water Act.[144]

Another practical example of integrating conditions into a license can be found in Sweden. In the Kattegat South[145] case, several fisheries organizations[146] have expressed their views, all opposing the establishment of the OWFs owing to a lack of alternative fishing areas, particularly for Norway lobster, and eventual manoeuvring problems that can arise during trawling. Accordingly, the conditions of the permit require the developer to maintain dialogue with commercial fishing organizations and, if the organizations are interested, to collaborate with them to establish and maintain a cooperation plan that enables continued commercial fishing in the OWF, including financial assistance. The government granted permits for the Galatea-Galene[147] and Kattegat South OWFs in May 2023, requiring operators to inform the Maritime Administration, Coast Guard, and Defence Forces, consult on protective measures, observe safety distances, and monitor shipping at the developer's expense.

Conclusion

Appropriate policies and legislation are crucial for promoting marine CoE between OWE and other sectors, as well as the environment. The difference between supporting positive active marine CoE—which involves interactions among maritime sectors and interests represented by win-win solutions—and passive marine CoE—which denotes areas that are deliberately left unplanned to preserve their ecological importance—lies in regulatory frameworks and marine governance approaches. Passive marine CoE relies more on strategic processes, such as policies guiding ocean management, along

[141] EC, *Best Practice Guidance in Multi-Use Issues and Licensing Procedures*, note 4, 11–12.

[142] Maximilian Felix Schupp, Andronikos Kafas and Bela H. Buck, "Fishing Within Offshore Wind Farms in the North Sea: Stakeholder Perspectives for Multi-Use from Scotland and Germany" (2021) 279 *Journal of Environmental Management* 111762.

[143] Ministry of Smart Administration and Regional Development (Latvia), note 106; see also EC, *Best Practice Guidance in Multi-Use Issues and Licensing Procedures*, note 4, 13–15.

[144] Noordzeeloket, note 98.

[145] Länsstyrelsen i Hallands Län, *Beslut om tillstånd enligt 7 kap. 28a § miljöbalken för uppförande och drift av vindkraftsparken Kattegatt Syd* (19 October 2022) Dnr. 6050-2021; Regeringen, *Beslut enligt lagen (1992:1140) om Sveriges ekonomiska zon om vindkraftsparken Kattegatt Syd* (15 May 2023) Diarienr: KN2023/010609.

[146] Havs- och Kustfiskarnas Pro-ducentorganisation (HKPO), Sveriges Fiskares Producentorganisation (SFPO) and Swedish Pelagic Federation producentorganisation (SPF).

[147] Regeringen, *Beslut enligt lagen (1992:1140) om Sveriges ekonomiska zon om vindkraftsparken Galatea-Galene* (15 May 2023) Diarienr: KN2023/01077.

with MSP and SEAs. Meantime, positive active marine CoE is pre-designed at the strategic planning level (especially in feasibility planning) and detailed through non-price criteria in the procurement procedures, EIA results, license conditions, and/or even informal agreements between sectors or stakeholders.

These tools—MSP, SEA, EIA, non-price criteria, and license conditions—are at the heart of marine CoE implementation by enhancing the promotion of positive active marine CoE and directly preventing or mitigating negative active marine CoE regarding disadvantages for one or more parties in direct user–user and user–environment interactions. However, their effectiveness and application vary across the countries of the Baltic and North seas, reflecting diverse environmental, social, economic, political, and cultural factors (e.g., local specifics such as public and community perceptions and their impact on local economies). The potential variations of marine CoE are thus also highly context-specific, depending on whether marine CoE issues are predominantly addressed at a more strategic level through MSP and feasibility studies or at the project level through such mechanisms as license conditions and EIA requirements.

Despite the availability of these tools, they are not always used to their maximum potential. This is influenced by a number of aspects such as the lack of marine CoE strategies at the national level, fragmented institutional responsibilities, insufficient integration of socioeconomic factors in EIA, and inappropriate use of non-price criteria at the procurement stage, as well as political and/or administrative reluctance to prioritize CoE outputs over short-term efficiency objectives. In addition, the lack of clear guidance on the definition and implementation of the marine CoE hinders its effective implementation. This is where national governments can play the biggest role, by adopting marine CoE strategies that link MSP, SEA, EIA, and licensing into a coherent framework (so-called "mainstreaming"). The role of the legislator would be to adapt the legal framework to fit within this framework, while marine spatial planners and competent MSP authorities should have a clear mandate to plan and design active marine CoE and passive marine CoE areas. Last but not least, all stakeholders, from artisanal fishers to multinational corporations, need to assess the viability of active marine CoE in their specific environment, as the development of marine CoE will depend on collaborative efforts at all levels and between all stakeholders.

In addition, the legal field could make a complementary contribution to the development of marine CoE theories and practice by exploring challenges and opportunities in other CoE environments (e.g., mountains) or for different sectors (e.g., mining, reindeer herding) to elaborate on shared principles of CoE, stakeholder management, and the broader systems perspective. Further research is also needed to determine how marine CoE and its ambitions and objectives should be prioritized and implemented more concretely, including cases of conflicts between several sectors (as opposed to mostly focusing on two sectors). Such an investigation could clarify the conditions, opportunities, and consequences of prioritizing interests in maritime spatial plans, management regulations, and licenses. Finally, there is a need to continue filling knowledge gaps on the cumulative impacts of OWE development on the marine environment. In this way, additional knowledge could be gained in order to implement marine CoE in a sustainable way.

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