PERMAGOV

Deliverable D2.2: Multi-layered Marine Governance Arrangements to support the European Green Deal

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Executive summary

The **European Green Deal (EGD)** adopted in December 2019 seeks to facilitate the transition of the EU towards a climate-neutral continent and a modern, resource-efficient, and competitive economy by 2050. In addition to a set of objectives, it is also a policy program that will affect the policy landscape, by driving the development of new directives and regulation, and the amendment of existing ones. In order to facilitate a transition of EU society to better protect the marine environment, decision making and implementation processes within marine governance will need to be improved to develop and implement measures through which EGD marine protection objectives will be achieved.

The **Horizon Europe PERMAGOV project** aims to improve the implementation and performance of EU marine policies to reach the goals set in the EGD. The PERMAGOV project focuses on four issue areas, so-called regime complexes: Maritime Transport, Marine Energy, Marine Life and Marine Plastics. Within each regime complex, 2 to 3 case studies are used to explore and analyse how governance arrangements are emerging and changing and improving their performance through the EGD. These case studies span three European Seas, the Baltic Sea, the Mediterranean Sea and the North East Atlantic.

As part of the first phase of the PERMAGOV project, this **report aims** to 1) Provide an overview of the multi-level marine governance arrangements for each PERMAGOV case study, including its key actors, rules and institutions, discourses, power resources and relations; 2) Undertake a first assessment of how the European Green Deal is - through specific EU policies - changing the multi-level marine governance arrangements that govern Maritime Transport, Marine Energy, Marine Life and Marine Plastics; and 3) Identify challenges and drivers within and between these arrangements that hinder or enable the successful implementation of EU policies that aim to achieve EGD objectives.

Marine governance refers to the capacity of various stakeholders, including state actors, maritime industries, and civil society groups such as NGOs and coastal communities, to govern activities and their impacts on the marine environment. **Multi-layered Marine Governance Arrangements (MLMGA)** are the temporary stabilization of the content and organization of a particular policy domain at a certain policy level or over several policy levels. A MLMGA stabilizes and changes over time. A MLMGA and how it changes can be analysed along four dimensions: actors and their coalitions, resources, rules of the game, and discourses.

The 9 cases used in the PERMAGOV project offer **different entry points into exploring how the EGD affects marine governance** within EU and across regime complexes. For Maritime Transport the Fitfor55 and Sustainable and Smart Mobility Strategy are guiding policies. Implementation of Marine Energy is guided by the Offshore renewable energy strategy, the Green Deal Industrial Plan and RePowerEU. For Marine Life the Biodiversity Strategy and Farm2Fork Strategy as well as the Common Fisheries Policy and its Marine Action Plan are relevant. Finally, Marine Plastics are governed through the New Circular Economy Action Plan and the Action Plan: Towards Zero Pollution for Air, Water and Soil.

In the **Maritime Transport** regime complex, two MLMGAs have been analysed: ‘decarbonising shipping’ and ‘Motorways of the Sea’. An important driver of change in the Maritime Transport regime complex is the discursive shift from energy efficiency to decarbonising shipping, resulting in rules to achieve decarbonization targets for both ports and

ships. In addition, to stimulate the move from road/rail to sea new rules are developed to stimulate short sea shipping with smaller vessels. Important challenges within the Maritime Transport regime complex are the costs for technological innovations of decarbonising shipping, the lack of predictability of rules, which reduces the willingness to invest in renewable energy for shipping and by ports, and a lack of clarity in rules in terms of requirements and possibilities to comply.

In the **Marine Life** regime complex the following MLMGAs have been analysed 'seabed integrity in the Baltic Sea' (consisting of the governance arrangements for dredging and bottom trawling) and 'Sustainable fisheries in Italian MPAs'. The introduction of the EGD (mainly the Biodiversity Strategy) in the regime complex Marine Life resulted in a more ecosystem-focussed, holistic narrative. The EGD strengthened the existing ecosystem-based approach in fisheries management and also depicts the integrity of seabed as a foundation of the marine ecosystem. The biodiversity discourse and the EGD ambitions can be seen as the driver of change in the MLMGAs in the Marine Life regime complex, however, it is unclear yet how this discourse will be translated into rules and available resources. There is a tension between the EGD/biodiversity discourse and the sectoral/industry discourses, and between the different rules systems within the MLMGAs around biodiversity/conservation and around regulating human activities/industry. A key concern within Marine Life is the integration and coherence between policies and governance levels. For example the biodiversity strategy and the Farm2Fork strategy are not fully aligned. On the one hand, it is uncertain how biodiversity is integrated in Farm2Fork, while on the other it is unclear how livelihoods and food security issues are integrated in the biodiversity strategy.

The regime complex **Marine Energy** consists of three MLMGAs: 'Floating Wind in the Celtic Sea', 'Energy islands in Denmark' and 'Offshore Wind in Norway'. Main drivers of change in the Marine Energy regime complex are the discourses of energy security, repowering, acceleration, the development of an integrated energy system and transboundary cooperation. These discourses changed the MLMGAs in Marine Energy in different ways. The energy security discourse, intensified due to the war in Ukraine, resulted in new rules such as REPowerEU plan, while integrated energy system and transboundary collaboration discourses in the Danish and Celtic cases empowered new coalitions on sea-basin level. Several challenges impede progress in the Marine Energy regime complex. Firstly, there are timing disparities between EU ambitions and Member States' specific regulatory and contextual issues. While the EU seeks acceleration under the EGD, lengthy and complex consenting, licensing and tendering processes persist in many Member States, which leads to long lead times and uncertainty for renewable energy projects. Secondly, time is required to develop necessary technologies and infrastructure, including port facilities for the deployment of offshore wind parks, hydrogen infrastructures, and so forth. Thirdly, grid capacity limitations and storage constraints hinder acceleration, despite discourses that suggest that technological challenges can be overcome with adequate resources. Fourthly, costs, and the pre-commercial status of some technologies e.g. floating wind, poses a major challenge for investment. Finally, the discourse around acceleration diverts attention away from biodiversity protection and sustainability concerns, raising questions about how rapid offshore energy development can be compatible with biodiversity targets e.g. 30x30 agenda, as well as co-existence with fisheries and other marine interests.

For the **Marine Plastics** regime complex the following MLMGAs have been analysed: 'Marine litter from fishing gear in the Baltic Sea' and 'Microplastic pollution of the Mediterranean Sea'.

The EGD introduced new rules for the regime complex Marine Plastics aimed at mitigating various sources of marine plastic pollution, such as the regulation of fisheries gear. Also discourses on producer responsibility and preventing pollution at the source are emerging in the Marine Plastics regime complex, but these discourses have to be strengthened to affect for example the domain of agri-plastics. In general, the plastic industry focuses on solutions, such as recycling, posing substantial challenge to change the discourse to preventive strategies. Specific for Marine Plastics is the important role Regional Sea Conventions play as key coordinators at multiple governance levels. Achieving policy coherence in the Marine Plastics regime complex is a challenge. Regulations (developed by different governance institutions) targeting different aspects of the plastic lifecycle and various pollution sources result in overlapping or conflicting governance actions. The Marine Plastics regime complex is facing an urgent need to reduce pollution due to its associated toxicity demanding fast action, while the EU governance frameworks are still in the early stages of developing mandatory regulations.

This deliverable **concludes** that regime complexes do not develop in a vacuum; they all develop within the EU marine governance institutional setting and are all affected by the European Green Deal policy instated by the EU. Therefore, developments within one regime complex influences the developments in other regime complexes. Understanding these linkages is crucial for effective policy development and implementation to address complex marine challenges. We therefore conclude that the implementation of the EGD is going to be supported by policy integration and synergies across marine regime complexes, the shift towards Ecosystem and prevention pollution at source approaches, resource interdependencies between regime complexes, cross-sectoral collaboration, governance coherence and alignment, and developing and improving regulatory frameworks and compliance.

1 Introduction

1.1 European Green deal and a changing governance landscape

The European Green Deal (EGD) adopted in December 2019[1] is the European Union's (EU) response to the climate and environmental emergencies it faces today and aims to make the EU the first climate-neutral continent. It seeks to facilitate the transition of the EU towards a climate-neutral continent and a modern, resource-efficient, and competitive economy by 2050. The EGD with its overarching vision for the future includes a focus on marine environmental protection, such as transport, energy, marine conversation, fisheries and pollution.

The EGD is implemented through so-called strategies (e.g. biodiversity strategy), action plans (e.g. zero pollution action plan) and initiatives (e.g. micro plastic initiatives). In addition to a set of objectives, it is therefore also a policy program that will affect the policy landscape, by driving the development of new directives and regulation, and the amendment of existing ones. Moreover, there is attention within the EGD to financial and just dimensions of this transition.

In order to facilitate a transition of EU society to better protect the marine environment, decision making and implementation processes within marine governance will need to be improved to develop and implement measures through which EGD marine protection objectives will be achieved. Marine governance refers to the capacity of various stakeholders, including state actors, maritime industries, and civil society groups such as NGOs and coastal communities, to govern activities and their impacts on the marine environment[2]. Improving marine governance is challenging because governance arrangements (i.e. a collection of actors that develop and implement policies within a particular policy domain) that deal with zero pollution, the energy transition, marine transport, fisheries and marine conservation often have developed over time and are characterized by routinized ways of collaboration in developing and implementing measures and rules to achieve sustainability objectives.

Moreover, transforming marine governance arrangements is not straightforward, because of the transboundary nature of marine sustainability issues. Marine governance arrangements therefore often span multiple governance layers and the relationship with EU regulation differs across these arrangements. For example, for shipping, the International Maritime Organization (IMO) is a central organization within which the EU has been strengthening its role by developing policies for ships that trade with the EU. The designation of Marine Protected Areas (MPAs) is a national affair, but is implemented in the context of EU Natura 2000 rules and regulation and the Convention of Biological Diversity.

In addition, some marine governance arrangements were already in flux as a response to earlier regulatory and societal developments. For example, marine offshore energy developments have accelerated over the last 5 years as a result of the Paris Agreement ambition to reduce Greenhouse Gas (GHG) emission to stay below 1,5 degree and increases in energy prices as a result of the Ukraine-Russian war. In addition, new governance arrangements might emerge that relate to and affect the implementation of the EGD. For

[1] European Commission (2019). Communication from the Commission; The European Green Deal COM(2019) 640 final. European Commission.

[2] Van Tatenhove, J. (2013). How to turn the tide: developing legitimate marine governance arrangements at the level of the regional seas. Ocean & Coastal Management, 71, 296-304.

example, the issue of microplastic pollution is relatively new and the EU is only at its infancy when it comes to addressing this type of pollution.

The EGD has put forward an overarching vision for a sustainable and climate-neutral European society and is driving a new wave of policy developments to achieve this vision. If and how this vision is achieved, however, depends on how existing and new governance arrangements are adapting in terms of who and how actors interact to develop and implement policies and legislation that govern the way in which different actors and sectors will need to change their daily practices to become climate-neutral and resource-efficient.

1.2 PERMAGOV project and scope

The Horizon Europe PERMAGOV project aims to improve the implementation and performance of EU marine policies to reach the goals set in the EGD. The project's first phase (2023-2024) focuses on identifying existing and emerging governance arrangements, assess their dynamics and performance and analyse how ongoing changes, as a result of the EGD, improve the way in which these governance arrangements develop and implement regulation that supports EGD objectives. Based on this first phase, PERMAGOV aims to develop collaborate and e-governance improvements and (institutional) Multi-Layered Collaborative Marine Governance Strategies which enhance the capability of end-users to contribute to the implementation of EU marine policies in the second phase of the project (2025-2026).

The PERMAGOV project focuses on four issue areas, so-called regime complexes: Maritime Transport, Marine Energy, Marine Life and Marine Plastics. Within each regime complex, 2 to 3 case studies are used to explore and analyse how governance arrangements are emerging and changing and improving their performance through the EGD. These case studies span three European Seas: the Baltic Sea, the Mediterranean Sea and the North East Atlantic. Figure 1 shows how EGD objectives around mobility, food, biodiversity, pollution, circular economy, climate neutrality and clean energy are linked to these four regime complexes and their 9 cases.

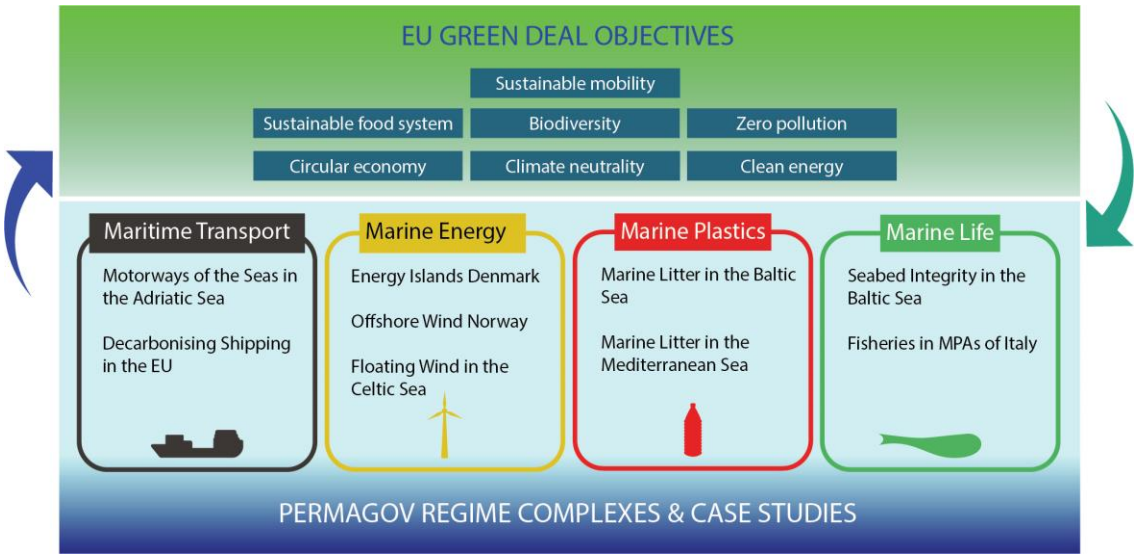

FIGURE 1 RELATIONSHIP BETWEEN EUROPEAN GREEN DEAL OBJECTIVES AND PERMAGOV REGIME COMPLEXES AND CASE STUDIES

The cases used in the PERMAGOV project offer different entry points into exploring how the EGD affects marine governance within EU and across regime complexes. Table 1 gives and overview of which EGD elements are of central focus within the regime complexes.

TABLE 1 THE EUROPEAN GREEN DEAL ELEMENTS OF THE FOUR PERMAGOV REGIME COMPLEX

Regime complex	European Green Deal Elements (Strategies and policies)
Maritime Transport	Fitfor55 Sustainable and Smart Mobility Strategy
Marine Energy	Offshore renewable energy strategy (and Fitfor55) Green Deal Industrial Plan & RePowerEU
Marine Life	Biodiversity Strategy Farm2Fork Strategy Common Fisheries Policy & Marine Action Plan
Marine Plastics	New Circular Economy Action Plan Action Plan: Towards Zero Pollution for Air, Water and Soil

1.3 Deliverable objectives and place within PERMAGOV project

This report contributes to the first phase of the PERMAGOV project by providing an overview of the governance arrangements that are studied within the 4 regime complexes and 9 cases of PERMAGOV. This deliverable makes use of the model developed in Deliverable 4.1[3] and follows and adds to Deliverable 2.1 that identified and mapped policies relevant to and within the four PERMAGOV regime complexes: marine life, marine plastics, marine energy, and maritime transport. D2.1 identified both EU and non-EU policies and guiding initiatives that were essential to the overarching goals set forth in the EGD[4]. Based on these selected policies and initiatives, this report aims to:

1) Provide an overview of the multi-level marine governance arrangements for each PERMAGOV case study, including its key actors, rules and institutions, discourses, power resources and relations.
2) Undertake a first assessment of how the European Green Deal is - through specific EU policies - changing the multi-level marine governance arrangements that govern Maritime Transport, Marine Energy, Marine Life and Marine Plastics

[3] Van Noort, Carolijn, Jan van Tatenhove, Ben Boteler, Cristian Passarello, Judith van Leeuwen, Hilde Toonen, Wesley Flannery, Päivi Haapasaari, Kåre Nolde Nielsen, Kamilla Rathcke, and Pavel Kogut. (2024). Deliverable 4.1: Developing the Multi-layered Collaborative Marine Governance Model. pp. 1-59.

[4] Passarello, C. and Boteler, B., Beardsley, C., Coelho, N. F., Crowley, C. K., Dyremose, S. C. S., Flannery, W., Haapasaari, P., Hegland, T. J., Knol-Kauffman, M., Lafitte, A., McLaughlin, S., Nielsen, K. N., Pereira, H., Toonen, H., Varjopuro, R., & van Leeuwen, J. (2023). Understanding EU policies and the EU Green Deal. PermaGov Deliverable 2.1

3) Identify challenges and drivers within and between these arrangements that hinder or enable the successful implementation of EU policies that aim to achieve EGD objectives.

This deliverable should be regarded as a starting point for the case studies to further their analysis in different PERMAGOV work packages and tasks to come. Its results are preliminary and only a first assessment of how the EGD is driving multi-level marine governance arrangements that govern Maritime Transport, Marine Energy, Marine Life and Marine Plastics to change and which challenges exist for these governance arrangements to achieve their EGD related objectives.

1.4 Reading guide

The structure of this report is as follows. In the next chapter, the concepts of multi-level marine governance arrangement and regime complex are elaborated upon, to provide an analytical framework to identify and analysis the changing dynamics within the governance arrangements of PERMAGOV's 9 case studies. Chapter 3 will explain the methodological process that has been used to collect data and analyse the governance arrangements of PERMAGOV's 9 case studies. The next 4 chapters introduce the 4 regime complexes and the 9 case studies: chapter 4 focuses on Maritime Transport, chapter 5 on Marine Life, chapter 6 on Marine Energy and chapter 7 on Marine Plastics. Each of these chapters: 1) introduce the overarching EGD elements relevant to the regime complex, 2) the case study analysis in terms of existing governance arrangements and dynamics related to EGD, and drivers and challenges that impact the potential performance of the governance arrangements to help achieve the EGD objectives, and 3) the overarching drivers and challenges at the level of the regime complex. We finalize the report with conclusions in chapter 8.

2 Theoretical approach: Multi-layered Marine Governance arrangements; stability and change

The policy arrangement approach is a theoretical framework to analyse the institutionalization, stability, and change of governance arrangements, particularly in terms of the interplay of daily political dynamics and broader societal structural transformations. It emphasizes the significance of governance arrangements in facilitating or constraining policy change and the intricate relationship between governance structures and the dynamics of policy practices.

2.1 Multi-layered Marine Governance arrangements

Governance arrangements are the temporary stabilization of the content and organization of a particular policy domain at a certain policy level or over several policy levels.[5] A governance arrangement can be analysed along four dimensions: actors and their coalitions, resources, rules of the game, and discourses[6]. These dimensions can be studied individually and in relation to each other[7]:

- Actors and their coalitions are public and private actors, organization and agencies involved in or affected by the development or implementation of marine policy-making.
- Resources refer to the unequal division of resources among these actors, which leads to differences in power and influence. Power refers to the mobilisation and deployment of the available resources and influence to determine policy outcomes. Examples of resources are money, information, permits, knowledge, or expertise.
- Rules of the game in marine policies and politics refer to the formal rules and procedures in different stages of the policy-making process (agenda setting, policy formulation, decision-making, implementation, enforcement and evaluation) and the informal rules and "routines" of interaction within marine practices and the relevant institutions of marine politics and policymaking[8].
- Discourses entail the norms and values, as well as the definitions of problems and approaches to solutions by the actors involved. A discourse is the specific ensemble of ideas, concepts and categorizations through which meaning is given to physical and social realities[9]. Marine and maritime discourses refer to ideas about the character and

[5] Van Tatenhove, J., Arts, B., & Leroy, P. (2000). Political Modernisation and the Environment. The renewal of Environmental Policy Arrangements (J. Van Tatenhove, B. Arts, & P. Leroy, Eds.). Dordrecht: Kluwer Academic Publishers.
Liefferink, D. (2006). The dynamics of policy arrangements: Turning round the tetrahedron. In B. Arts & P. Leroy (Eds.), Institutional Dynamics in Environmental Governance (pp. 45–68). Kluwer, Dordrecht.
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[6] Van Tatenhove, et al. (2000).
Liefferink, D. (2006).
Van Noort, Carolijn, et al. (2024).
[7] Van Tatenhove et al. (2000)
[8] Van Tatenhove, J. P. M. (2022). Liquid Institutionalization at Sea. Reflexivity and Power Dynamics of Blue Governance Arrangements. Palgrave Macmillan UK.
[9] Hajer, M. A. (1995). The Politics of Environmental Discourse. Ecological Modernization and the Policy Process. Claredon Press.

definitions of problems and possible solutions related to marine ecosystems and/or defined by maritime sectors, their causes, and perceived solutions.

Within PERMAGOV, we make a distinction between policy domains and regime complexes. A policy domain refers to a Multi-Level Marine Governance Arrangement (MLMGA) or connected MLMGAs that share the same issue area, such as Motorways of the Sea or the development of offshore energy islands.

In general, a regime complex is understood as 'an array of partially overlapping and non-hierarchical institutions governing a particular issue area[10]. PERMAGOV understands regime complexes as the institutional setting of the collection of different MLMGAs which are associated with one or more European Green Deal target areas, such as Maritime Transport, Marine Life, Marine Energy and Marine Plastics. These four regime complexes include important maritime sectors and economic activities that cause environmental impacts.

In other words, regime complexes are shaped by one or more MLMGAs, which consist of coalitions of (non-)governmental actors at different governance levels (subnational, national, supranational, international) who try to influence activities and developments within a policy domain. In interactions these actors negotiate, develop and design legitimate initiatives, institutions and solutions, based on specific discourses, the ability to mobilize and to use resources and to define the rules of the game on different governance levels[11].

2.2 Policy innovation; stability and change

MLMGAs stabilize and change over time. Change and stability are shaped by processes of structuration and stabilization. Structuration is the gradual formation and production of structural properties (rules, resources, and discourses) of a MLMGA that are the result of interactions between actors. Stabilization refers to the process in which already formed marine governance arrangements constrain the agency of involved actors, while actors also defend the existing governance arrangements based on their interests[12]. In general, processes of structuration and stabilization within MLMGA is the result of the interplay of processes of political modernization and policy innovation in interactions. Changes in the dimensions of MLMGA are the result of processes of political modernization on the one hand, that is, the interplay of contextual processes of structural political and social changes, and problem-oriented renewal of policy-making and decision-making by actors in interactions on the other[13].

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[10] Raustiala, K., & Victor, D. (2004). International Organization, 58(2), 277–309; Van Tatenhove, J. (2016), Environmental Politics, 25 (1), 160-179.
Van Tatenhove, J. P. M. (2016). The environmental state at sea. Environmental Politics, 25(1), 160–179.
Gómez-Mera, L., Morin, J., & Van de Graaf, T. (2020). Regime Complexes. In F. Biermann & R. Kim (Eds.), Architectures of Earth System Governance: Institutional Complexity and Structural Transformation (pp. 137-157). Cambridge: Cambridge University Press.

[11] Van Tatenhove, J. (2013).

[12] Arts, B., & van Tatenhove, J. (2006). Political modernisation. In Institutional Dynamics in Environmental Governance (pp. 21–43). Springer Netherlands.
Van Tatenhove, J. P. M. (2022a). Liquid Institutionalization. In J. P. M. van Tatenhove (Ed.), Liquid Institutionalization at Sea: Reflexivity and Power Dynamics of Blue Governance Arrangements (pp. 11–36). Springer International Publishing.

[13] Van Tatenhove, J. (2013).

3 Methodology

3.1 Exploratory case study

This deliverable is based on a case study approach, with 9 cases. The cases allow for an in-depth analysis of a real-life phenomenon, one in which the boundary between the phenomenon and the context are blurred[14]. In this Deliverable that is the way in which the EGD is affecting existing and new governance arrangements that are involved in implementing the EGD objectives across a range of marine issues, such as those related to transport, life, energy and plastics. The case studies are explorative in nature, because the way in which the EGD is changing governance dynamics within the context of the marine realm has not been studied widely yet.

The 9 cases studies represent four regime complexes. Within each regime complex, a comparative element was added, in terms of how the regime complex relates to higher level EGD elements (i.e. strategies, action plans and initiatives) and the shared drivers and challenges that will impact the potential for achieving the objectives of these EGD elements.

3.2 Data collection

As elaborated in this section, data collection for each of the case studies was done based on document analysis and co-production of results with PERMAGOV end-user partners and other stakeholders.

3.2.1 Document analysis

A desktop study was performed to identify relevant documents for the analysis of the multi-level marine governance arrangements for the 9 cases. The starting point for this document analysis were the identified policies of D2.1[15]. The desktop study focused on identifying additional rules and regulations relevant to the governance arrangements, as well as documents that show which power resources and discourses shape the interaction between actors involved and how these are affected by the EGD and its implementing legislation. Documents collected consist of legal and policy documents (EU directives, regulation, action plans, strategies), peer-reviewed articles, media coverage, blog posts, EU websites, public consultations, grey literature, assessments and reports.

3.2.2 Co-production with end-user and stakeholders

Integral to the PERMAGOV project is the collaboration between scientists and practitioners from the four regime complexes, so called end-users. Each case study has a dedicated end-user. End-users come from a variety of societal backgrounds, including industry, civil society and policy making. End-users have been contributing to the collection of data and the iterative approach to data analysis (see 3.3) in a variety of ways:

[14] Yin, R. K. (2009). Case study research: Design and methods (Vol. 5). Sage.
[15] Passarello, C., et. al. (2023).

- Interviews/meetings between the academic case study lead and the dedicated end-user
- Written feedback on draft case study templates that have been used to collect and analyse data
- Dedicated online case study workshops in December 2023 where initial results of case studies have been presented within the author group of this Deliverable

A wider set of stakeholders has been consulted in a PERMAGOV stakeholder workshop in Brussels in February 2024[16]. Around 50 individuals from research, policy making, industry and civil society as well as partners from the PERMAGOV project came together to discuss among others an overview of the marine governance arrangements studied by PERMAGOV and to engage in a critical discussion about the dimensions and linkages of said governance arrangements.

In addition, some cases have engaged with stakeholders also through semi-structured interviews.

3.3 Data analysis

The data analysis is characterized by an iterative approach, which allowed for a step-by-step process through which the case study analysis has been co-developed, elaborated and refined. This iterative approach consisted of the following steps:

- All case studies started with an orientation phase in which case study leads identified, based on D2.1[17], which multi-layered marine governance arrangements were relevant to the case study.
- A template for case study analysis was drafted that was populated based on the policy document review and end-user input. The template asked to analyse the dynamics between the dimensions of the identified governance arrangements and to identify how the EGD is changing these dimensions. The outcome was presented during the online case study workshop in December 2023 at which end-users were also present.
- Based on the online case study workshop, a further refinement of the analysis was done, in preparation of the PERMAGOV stakeholder workshop in February 2024.
- After the February 2024 stakeholder workshop, the case study analysis was finalized and, with end-users input, drivers and challenges were identified.
- In April 2024 a series of meetings for each regime complex was organized to do a comparative analysis and identify similarities between drivers and challenges.

[16] Boteler, B., Flannery, W., Kogut, P., Passarello, C., van Leeuwen, J., van Noort, C., van Tatenhove, J., and West, L. (2024). PermaGov Stakeholder Workshop – Summary. Milestone 5 - Task 2.1 and 3.2 Case Stakeholder Workshop. Milestone 7- Task 4.1 Focus Group. Available at: https://www.permagov.eu/resources

[17] Passarello, C., et. al. (2023).

4 Regime complex Maritime Transport

4.1 European Green Deal developments around Maritime Transport

Maritime transport plays a crucial role in the global economy and is among the most energy-efficient modes of transport[18]. It is also a large and growing source of greenhouse gas emissions. Global shipping contributes about 3.0% of the world's GHG emissions[19]. The contributions of shipping to global GHG emissions are projected to increase by 130% of the 2008 levels by 2050[20]. At the EU level, various actions and policies have been undertaken. The main high level European Green Deal policy for maritime transport include the Fitfor55 strategy which aligns with other directives, regulations and communications discussed in later sections. Fit for 55 package is EU's strategy to reduce carbon emissions by at least 55% by 2030. In the maritime transport industry, this is to be achieved through policies such as Sustainable and Smart Mobility Strategy and EU Emissions Trading System (ETS). As the next sections will show, the EU's Sustainable and Smart Mobility strategy focuses on how the EU transport system can achieve its green and digital transformation and become more resilient to future crises through smart, competitive, safe, accessible, and affordable transport system (including maritime transport). A key instrument for the Sustainable and Smart Mobility strategy is EU's trans-European transport network policy (TEN-T). The EU ETS included emissions from shipping (5,000 Gross Tonnes and above) for the first in January 2024. It is a directive for the shipping companies to surrender their carbon emission allowances gradually: 40% for verified emissions from 2024, 70% from 2025 and 100% from 2026. PERMAGOV'S case study 1, focuses on decarbonizing shipping which aligns with EU's EGD of increasing carbon emission targets and net zero climate ambition. In this case, we examine how the integration of shipping in the EU ETS will accelerate or hinder the implementation and performance of EU marine policies to reach the goals set out in the EGD. Other related policies such as FuelEU maritime initiative, Monitoring, Reporting and Verification (MRV) and Alternative Fuel Infrastructure Regulation are also highlighted. Case study 2 focuses on the Motorway of the Sea (MoS) in the Adriatic Sea and investigates how ports in the Adriatic Sea (organised in the Adriatic Port Association) collaborate to further the objectives of the MoS programme.

[18]Lister, J. (2015). Green shipping: Governing sustainable maritime transport. Global Policy, 6(2), 118-129.

[19] United Nations Trade and Development (UNCTAD). (2023). Review of Maritime Transport 2023 - Chapter 3: Decarbonizing shipping. Available at; https://unctad.org/system/files/official-document/rmt2023ch3_en.pdf

[20] IMO (2020). Fourth IMO Greenhouse Gas Study 2020. Available at https://www.imo.org/en/ourwork/Environment/Pages/Fourth-IMO-Greenhouse-Gas-Study-2020.aspx.

4.2 Case 1 Decarbonising shipping

4.2.1 The MLMGA for decarbonizing shipping

Due to the global nature of international shipping and the difficulty to allocate GHG emissions to different countries, the United Nations Framework Convention on Climate Change (UNFCCC) excluded GHG emissions from seaborne trade[21]. The International Maritime Organisation has been considered as the most appropriate organisation to address this challenge from a global perspective. Measures adopted by the IMO for the reduction of GHG emissions from shipping such as the Energy Efficiency Design Index and the Ship Energy Efficiency Management Plan mainly focused on enhancing energy efficiency of specific ships[22]. However, the increasing share of shipping emissions to global GHG emissions coupled with climate change concerns have contributed to pressures on shipping to deal with CO2 emissions through the development of environmentally friendly shipping policies[23]. The Marine Environment Protection Committee of the IMO introduced a global data collection system for CO2 emissions from shipping. Global market-based measures (MBMs) have also been proposed as crucial in dealing with GHG emission from shipping, but their complexity and time-consuming nature given the need for consensus among different countries with different interests, MBMs are considered long term measures by the IMO[2425].

In the face of the challenges to introduce a global MBM to address GHG emissions from international shipping, regional policies have come along. Within the European Union, the 2003 Directive of the European parliament and of the Council establishing a system for greenhouse gas emissions allowance trading within the Union is an important step[26]. The EU ETS (emission trading scheme) is a “cap and trading” scheme for greenhouse gas emission within the EU. It seeks to promote reductions of greenhouse gas emissions in a cost-effective

[21] Van Leeuwen, J. (2010). Who greens the waves? Changing authority in the environmental governance of shipping and offshore oil and gas production (Vol 1). Wageningen, The Netherlands, Wageningen Academic Publishers.

[22] Shi, Y., & Gullett, W. (2018). International regulation on low-carbon shipping for climate change mitigation: development, challenges, and prospects. Ocean Development & International Law, 49(2), 134-156.

[23] IMO (2020). Fourth IMO Greenhouse Gas Study 2020. Available at https://www.imo.org/en/ourwork/Environment/Pages/Fourth-IMO-Greenhouse-Gas-Study-2020.aspx.

[24] IMO (2010). Full Report of the Work Undertaken by the Expert Group on Feasibility Study and Impact Assessment of Possible Market-Based Measures, MEPC 61st Session, Agenda Item 5, IMO Doc. MEPC61/INF.2 (13 August 2010).

[25] Van Leeuwen, J., & Van Koppen, C. S. A. (2016). Moving sustainable shipping forward: The potential of market-based mechanisms to reduce CO2 emissions from shipping. The Journal of Sustainable Mobility, 3(2), 42-66.

[26] EU (2015). European Union ETS Handbook. https://climate.ec.europa.eu/system/files/2017-03/ets_handbook_en.pdf

and economically efficient manner by serving as a major carbon market, and to promote a level playing field for member states in their Greenhouse emission reduction efforts[27].

In 2019, the famous EGD was released targeting climate neutrality in Europe by 2050. A key strategy to achieve this target is Fit for 55, which is EU's target of reducing net greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels. Among other changes resulting from the EGD, the European Commission (EC) has extended the EU ETS, which initially focused on emissions from major energy sector, manufacturing industry and aviation to cover CO2 emissions from the maritime sector from January 2024. As such, the EU ETS is in alignment with various objectives of the EGD in terms of the European Green Deal's objective to (1) transform the EU into a fair and prosperous society, with a modern, resource-efficient, and competitive economy and net zero greenhouse gas emissions by 2050 (climate neutrality), (2) promote energy efficiency and low-carbon solutions, (3) decouple economic growth from resource use through the establishment of a cap on the maximum amount of greenhouse gases that can be emitted.

EU ETS marks an important step towards decarbonising shipping. Yet, it is unclear how the information and availability of GHG emission reduction strategies is leading to changes in decision-making in the shipping sector. This study will examine how the integration of shipping in the EU ETS will accelerate and/or hinder decarbonisation of shipping. Specifically, the study will examine the changes in decision-making by cargo shippers within the shipping sector on decisions such as cargo/container routes, decisions on ports of call, etc. and what drives these decisions, how these changes manifest within the sector and EU, and identify the challenges within and between governance arrangements that may hinder or enable the successful implementation of the EGD. Understanding these changes is particularly important as for instance, scholars have indicated that MBMs such as ETS may provide financial incentives for shipping operators to reconfigure their networks and avoid voyages to some EU ports.

Rules of the game

There are various decisions and regulations established, revised, and being implemented towards decarbonizing shipping. These policies regulate specific activities within shipping aimed at contributing directly or indirectly to decarbonization as highlighted below.

At the EU level, the emissions trading scheme serves as a major carbon market for greenhouse gas emission trading within the EU. As part of the ETS compliance cycle, shipping companies are required to have an approved monitoring plan and to publish their emissions annually through the Monitoring, Reporting and Verification (MRV) regulation[28]. FuelEU maritime initiative forms part of EU's Renewable Energy Directive (EU REDII). FuelEU seeks to increase the demand for and consistent use of renewable and low-carbon fuels and reduce

[27] European Union (2023). Directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading system. Available at https://data.consilium.europa.eu/doc/document/PE-9-2023-INIT/en/pdf.

[28] EU (2015). European Union ETS Handbook. https://climate.ec.europa.eu/system/files/2017-03/ets_handbook_en.pdf

the greenhouse gas emissions from the shipping[29]. Under FuelEU regulation, shipowners are required to monitor both the type and amount of energy used, in port and at sea aimed at increasing the use of renewable and low carbon fuels. From 2025, FuelEU Maritime will apply to all ships of 5,000 GT and over calling at EU ports, regardless of their flag. The regulation's scope covers 100% of energy use for voyages within the EU, and 50% for voyages between an EU and non-EU port.

Various mechanisms have been put in place by the EU to ensure compliance to these rules including *Pooling* - Pooling is a mechanism that gives shipowners some flexibility in achieving compliance. Emissions can be pooled between two or more ships verified by the same body to achieve compliance per individual ship, subject to certain conditions[30]. Total pooled compliance must be positive, which means that ships cannot have a deficit after pooling emissions. For example, pooling one ship at 120% compliance and another at 80%, the balance is 100% compliance. However, pooling two ships at 80% results in the same compliance deficit and is therefore not permitted. *Borrowing and banking* -ships can bank their compliance surplus for the subsequent reporting period or borrow compliance surplus in advance from the following period to compensate for a deficit.

Alternative Fuel Infrastructure Regulation (AFIR) seeks to ensure the installations of recharging and refuelling stations for alternative fuels to be deployed to enable the maritime transport sector to significantly reduce its carbon footprint[31]**.** For example, Port authorities – requiring ships to use shore-side power while at berth to avoid running on boat engines while berthed. Energy Taxation Directive (ETD) (2003/96/EC) is another relevant regulation. Framework for the taxation of energy products including electricity, motor, and most heating fuels. Brings maritime industry heavy oil into scope for intra-EU voyages, removing the previously exempt status of these fuels.

There are voluntary compliances - Informal rules of the game which provide guidelines for generally approved standards of shipping. For instance, the Lloyd's Register provides an international marine shipping classification system aimed at ensuring safety, reliability and efficiency of ships and shippers compliances to maritime transport regulations[32]. There are also schemes to stimulate reduction of GHG emissions from maritime supply chain actors. These are dominated by front runners (especially cargo owners), that are susceptible to external pressure and demands to build a greener profile. Environmental Code of Practice. Voluntary commitments by major actors such as cargo owners and ports, to

[29] European Commission (2023). FuelEU maritime initiative: Council adopts new law to decarbonise the maritime sector. 25 July. Available at; https://www.consilium.europa.eu/en/press/press-releases/2023/07/25/fueleu-maritime-initiative-council-adopts-new-law-to-decarbonise-the-maritime-sector/

[30] European Commission (2021). Regulation of the European Parliament and of the Council on the use of renewable and low-carbon fuels in maritime transport and amending Directive 2009/16/EC. https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52021PC0562.

[31] European Union (2023). Alternative fuels infrastructure: Council adopts new law for more recharging and refuelling stations across Europe. https://www.consilium.europa.eu/en/press/press-releases/2023/07/25/alternative-fuels-infrastructure-council-adopts-new-law-for-more-recharging-and-refuelling-stations-across-europe/

[32] Lloyd's Register (2024). Maritime classification. http://www.lr.org/en/services/classification-certification/transfer-of-class/

contribute to environmental performance and sustainable development. The Green Award schemes and associated differentiated port fees reductions to vessels and shipping companies that have made additional investments in the vessel to improve the environmental performance, safety and quality. For example, the Port of Rotterdam Authority rewards vessels that have a Green Award certificate with discounts on the port dues. There are also tanker management self-assessment programs to assess the safety and environmental credentials of tankers and to improve and align their policies and procedures with industry best practices on safety and pollution prevention.

Actors

Here we examine the different organizations, groups and their coalitions involved in the making and implementation of regulations or policies (formal or informal, existing or new) as well as how they influence each other and are influenced by these regulations. At the supra-national level, the International Maritime Organisation - responsible for the international regulation of safety and environmental protection in international shipping mainly through Marine Environment Protection Committee arm of the IMO. The interactions between actors at the IMO level could influence the extent of the implementation of EU regulations such as ETS, especially on non-EU flagged vessels. The main actors at the EU level includes the European Commissions which performs its functions through its arms such as EU ENV – responsible for environmental policies of the EU. EU CLIMA is the EU body leading efforts/actions to fight climate change. EU member states (especially flagged states) are important actors at the EU level. Flagged states may influence various EU policies on shipping. Other non-EU flagged states such as Egypt and Morocco may indirectly influence EU level decisions and maritime compliance due to their locations.

Various industry actors and their coalitions also play important roles. These include cargo owners – a cargo owner refers to the owners of any goods and any bailor, bailee consignor shipper consignee or other respective agents in relation thereto (but shall not include the Port Authority). There are different types of cargo ownership such as owner operator and different types of Cargoes. *Tankers* - transport liquids like oil and chemicals. In tanker shipping, the main cargo owners are oil majors and commodity traders. In some cases, oil majors' own ships, but in the vast majority of cases, they charter-in vessels in the freight/charter markets to perform transport work. *Container ships (box ships)* are large vessels designed to transport standard 10ft, 20ft, 40ft, 45ft. Container ships are widely used in international transport they are usually highly automated and newer models even emit zero emissions. *Bulk carriers/cargoes* – mostly transport unpackaged commodities. *Roll-on-roll off cargoes* are vessels designed to carry wheeled cargo, such as cars and trucks, etc.

Other actors such as shipowners, ship operators, commercial ship managers, technical ship managers, ship and motor builders as well as banks and insurers play crucial roles in the maritime transport sector. For instance, the role of shipbuilders and marine technology developers in achieving carbon neutrality has become very critical as they are expected to design energy efficient ships which are compatible with the alternative fuels being developed. It is estimated that more than 50,000 ocean-going vessels will require retrofitting or complete

replacement in the next two decades to align with the 2050 carbon-neutrality goal[33]. Similarly, banks and insurers would play a crucial role in supporting the finance for new ship building, providing insurance of ships and good in transit as well as financing the path to alternative fuels and infrastructure.

Various Environmental non-governmental organisations (NGOs) and industry-multistakeholder associations/groups also play important roles in maritime transport. Environmental NGOs influence policies and regulations related to carbon emissions in maritime transport through research, workshops, position papers, and other environmental campaigns. Transport and Environment and Clean Shipping Coalition (CSC) are typical examples. In shipping, these NGOs have campaigned for the enforcement of stricter enforcements of and changes in regulations to cut carbon emissions and enhance use of green fuels towards environmental protection.

Industry associations such as the World Shipping Council, European Community Shipowners Association (ECSA), European Shippers Council (ESC), Global Shippers Alliance (GSA), European Sea Ports Organization (ESPO), European Association for Forwarding, Transport, Logistics and Customs Services (CLECAT), International Chamber of Shipping, Baltic and International Maritime Council (BIMCO), International Association of Tanker Owners (Intertanko) and International Association of Ports and Harbours. These industry associations seek to not only represent the interests of their members but also to serve as a link between regulators and their members in exchanging information and relaying concerns of members. Leadership of such associations may also represent their members at meetings with regulators aimed at influencing policies in their favour. Other industry related associations such as Global Maritime Forum also play crucial roles. Though they appear as NGO in nature, it often serves as a platform for industry players to meet with regulators and other stakeholders meet to push their interests. The shift to alternative fuels also suggests that heavy fuel producing countries such as Organization of the Petroleum Exporting Countries (OPEC) and companies fearful for their markets in heavy fuel may counter a total shift from such fuels.

Discourses

There are major viewpoints on decarbonizing shipping and what needs to change to reduce the carbon emissions from shipping. Energy efficiency discourses complemented with a stronger drive for net-zero and the search for transition to renewable energy. This aligns with the ‘clean ship concept’ – where major actors such as cargo owners may seek good public image by hiring ‘clean ships’ with less emission. Transparency on GHG emissions – MRV as crucial in ensuring effective emission reductions by serving as an effective monitoring and reporting system. Discourses on carbon leakage and ship evasion and the socioeconomic implications on ships and EU member states (especially Southern European countries). Discourses around flexible shipping mechanisms to ensure compliance, such as hybrid fuel engines for future ships, and pooling, where over-compliant ship could make up/pull another ship(s) to make up for where it falls, etc. are relevant. Digitalization of ships and ship systems/infrastructure - to enhance connectivity between ships, and shore/ports, through

[33] OECD (2023). Charting a Course to Net Zero: The Crucial Role of Shipbuilding in Greening the Maritime Sector. https://oecd-environment-focus.blog/2023/12/11/charting-a-course-to-net-zero-the-crucial-role-of-shipbuilding-in-greening-the-maritime-sector/

common standards to share data are being pushed in the discourses of decarbonizing shipping. Another important viewpoint is the idea of shared responsibility. Instead of 'common but differentiated responsibilities' (CBDR), there is increasing discussions around level playing field, leaving no one behind, etc, not just with compliance mechanisms but also information dissemination and technology (digital ships and ports, etc.). Regional trade: discussions on regional trade to ensure the full implementation and compliance to regional regulations such as the ETS. Considering the global nature shipping it will be interesting to know how regional trade discourses unfold.

Power resources

There are different power resources; knowledge, financial, human, legal/formal position, informal relations, and resources that are becoming (more/less) available to different actors through the revised EU ETS and associated regulations towards decarbonizing shipping. The EU has power within IMO by being a coalition of port states that set higher standards than globally exist at the IMO level. In addition, non-EU port states such as Egypt and Morocco have become relevant and powerful due to their likely competitive advantage because of their proximity to EU ports where ETS strictly applies. The (potential) evasive activities of ships to such ports has been highlighted in position papers from various industry associations to the EU[34]. The possibility of use of evasive tactics by shippers through transhipment at non-EU ports means that such ports would need to be engaged by the EU to ensure the effective implementation of EU ETS and other related policies. Similarly, countries with large vessel registries could wield more power as they could resist strong decarbonising measures especially at the IMO level and to some extent, the EU level. This could impact on the success of EU-based GHG policies.

Besides, States/companies/groups that contribute more to financing the implementation of ETS and related policies such as maritime transport decarbonisation fund (the Ocean Fund) which is financed by revenues from the auctioning of ETS allowances. The financial capacity of such actors could make them more powerful in determining policies related to decarbonisation and climate change actions.

At the industry level, cargo owners are often several hundred times larger than ship owning companies, giving them considerable power over other stakeholders in the tanker value chain. It is estimated that container trade is the biggest sector, accounting for about 52% of maritime transport by value[35]. Such powerful companies can impose their commercial priorities onto shipowners and managers. In addition, voluntary commitments (e.g., research funding) by these major actors in maritime transport to contribute to environmental performance and green transition are also giving corporate interests greater say in shaping the rules of the global shipping environmental policy agenda[36].

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[34] European Shippers Council (2024). Joint Letter to DG CLIMA regarding ETS Maritime, December 2023. https://europeanshippers.eu/download/joint-letter-to-dg-clima-regarding-ets-maritime-december-2023/

[35] Lister, J. (2015).

[36] Lister, J. (2015).

4.2.2 How the EGD influences the dynamics within the MLMGA of decarbonizing shipping

The European Green Deal relates to the EU ETS in decarbonizing shipping in various ways. First, is the inclusion of shipping in the EU Emissions Trading Scheme from January 2024 has expanded the scope of the scheme towards net-zero emission in 2050– a key target of the EGD. In terms of rules of the game, there is a shift from energy efficiency regulations towards renewable energy directives (e.g., EU RED) and alternative fuel infrastructure regulations (AFIR) and the inclusion of Ports of Call in ETS (maritime). These regulations have been accompanied by discourses of renewable and low carbon (green) fuels, transparency (MRV), regional trade, shared responsibility (leaving no one behind), flexible shipping mechanisms (e.g., hybrid fuel engines) and digitalization of ships and shipping infrastructure - to enhance connectivity between ships, and ports, common standards to share data. Views on potential evasion by ships at non-EU ports are also highlighted and discourses of examining emissions from well-to-wake (life cycle) of alternative sources are also crucial. In addition to EU-member states, actors such as cargo owners and their coalitions, ship builders, Banks/insurers, Port cities/communities have become crucial actors driving the new directives and regulations on shipping. With the inclusion of shipping into the ETS, the EU-has become a pace setter in global zero emission targets, an important resource in term information, skills and capacity to serve as a blueprint for other jurisdictions. Banks and insurers have also become key actors in alternative energy financing. The EGD's targets have been driving forces in establishment of these directives and regulations within shipping. Generally, the European Green Deal has significantly contributed to the shift from energy efficiency to zero and near-zero propulsion of a ships, both as a change in rules of the game as well as in discourses. Figure 2 provides a pictorial illustration of the changes in the multi-level governance arrangement of decarbonizing shipping as described above.

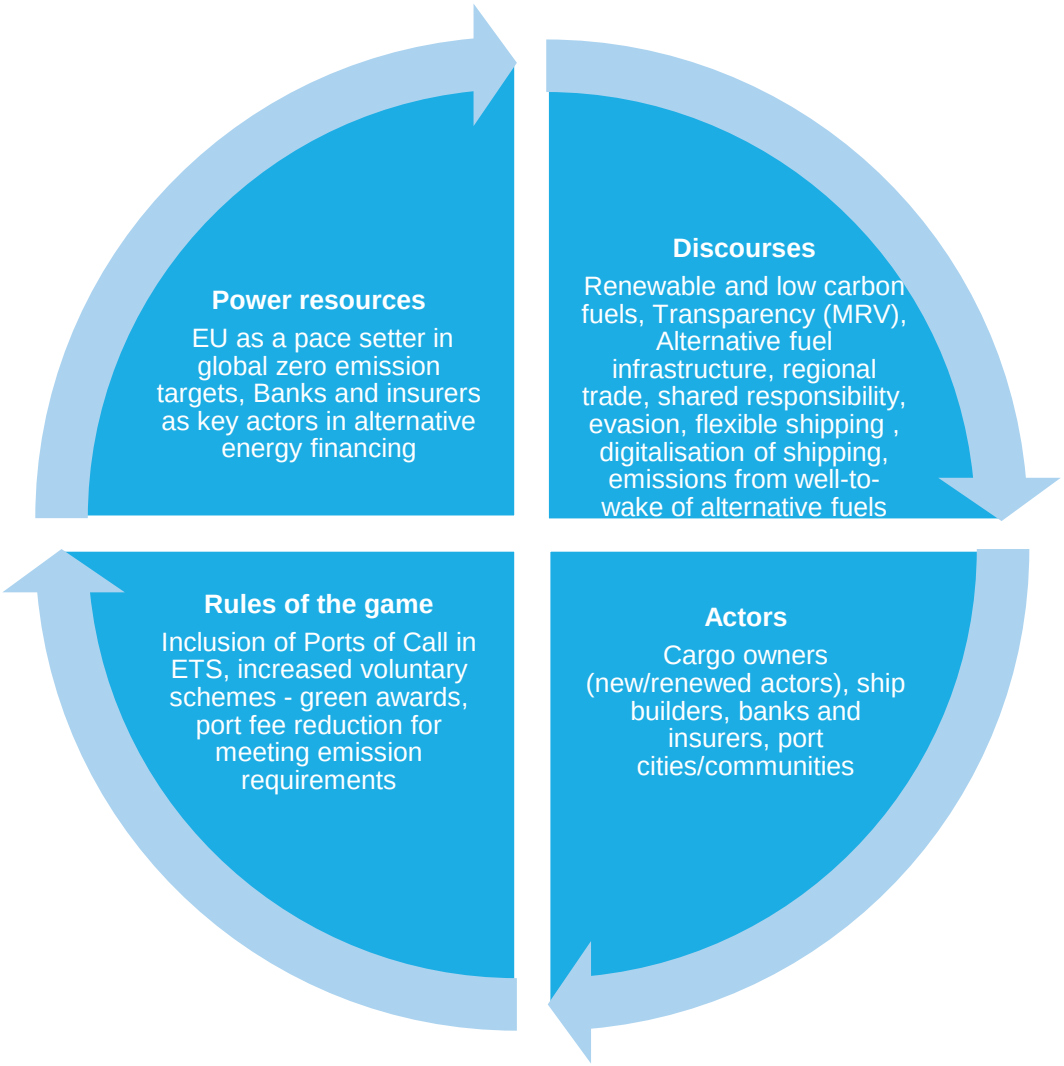

FIGURE 2 NEW DYNAMICS IN THE MLMGA FOR DECARBONIZING SHIPPING WITHIN THE EU

4.2.3 Drivers and challenges

The key drivers and challenges in decarbonizing shipping that (can) affect the successful implementation of the EGD are, first, the introduction of flexible ship mechanisms to ensure compliance, such as hybrid fuel engines for future ships, and pooling, where over-compliant ship could make up/pull another ship(s) to make up for where it falls could enhance compliance to achieve EGD objectives. MRV is crucial in ensuring effective emission reductions by serving as an effective monitoring and reporting system and dealing. It will also help deal with trust issues among the different stakeholders in their emission reporting. Digitalization of ships and ship systems/infrastructure to enhance connectivity between ships and ships and shore/ports, and common standards to share data could serve as an important data sharing tool and lessen the reporting burden of companies by providing a uniform emission reporting platform.

However, the additional responsibilities and cost to shippers and other stakeholders brought by the ETS, and the lack of clarity on how emission cost is calculated could negatively impact the effective implementation of the ETS. To address such challenges, initiatives such as CountEmissionsEU - a proposal for a single methodology for calculating GHG emissions from

transport services (including maritime transport) could be crucial in dealing with such challenges. In addition, the lack of clarity on who pays for the cost of emissions or benefits from carbon allowances and alternative fuels makes the ETS implementation challenging. Related to Institutional incentives barrier, inappropriate provision for institutionalized incentives for actors where for examples, there is “split incentives” for alternative fuel usage between shipowner and charterer could mean that some actors may feel the ETS pain more than others who may easily pass on the cost.

Another important issue is the stakeholders (e.g., member states and industry actors) concerns about how the EU could deal with evaders (example, transshipment at non-EU ports in Morocco and Egypt) could have socioeconomic impacts and affect how member states (especially Southern Europe) comply with ETS towards zero emission. A related view is the risk of carbon leakage and business leakage at the expense of EU ports. Hence, the need for effective monitoring processes to track changes in port traffic such as shifts to non-EU ports.

Discourses such as alternative fuel/energy sources, renewable energy, digitalization have been key drivers in decarbonizing shipping. However, the technical challenges associated with these changes in shipping could affect implementation. Also, dealing with concerns on understanding lifecycle (from well-to-wake) of alternative fuels/energy sources such as batteries/electricity at ports and understanding how much carbon is emitted not just at the usage of the alternative fuel but examine from their production to usage, and how it impacts on carbon emissions is crucial.

Actor Accountability challenges where powerful actors could have their way by paying fines without meeting carbon emission standards whilst smaller and less powerful actors may not have such resources could lead to unequal playing filed. This could lead to increasing trend of evasion and conflicts among different actors. The pace of change resulting from EU´s shifting priorities coupled with the uncertainties associated with the alternative fuel sources creates doubts for the needed stable and long investment planning (e.g.: investments in different types of fuels and related infrastructures). Relatedly, technological limitations in delivering suitable, less carbon intensive, fuel alternatives that are adequate for long-distance shipping. Finally, the limited capacity of stakeholders to communicate amongst themselves on key aspects such as ETA tends to stifle collaboration.

4.3 Case 2 Motorways of the sea in the Adriatic Sea

4.3.1 The MLMGA for motorways of the sea in the Adriatic Sea

This case Study investigates how European ports collaborate to further the objectives of the Motorways of the Sea programme, which is the maritime dimension of the EU’s trans-European transport network policy. The field data on the governance arrangement will be gathered from the context of the Adriatic Sea, namely from the ports that constitute the *North Adriatic Port Association*. It is at the port level that public policy and private policy interlink, constituting the two layers of this arrangement.

To adequately address the objectives of the EGD and SSMS, the revision of the TEN-T Regulation aims at reinforcing the contribution of the TEN-T to the decarbonisation and digitalisation objectives of EU transport policy. In particular, the proposed revision of the Regulation aims to make sure that an appropriate infrastructure basis to alleviate congestion

and reduce GHG emissions is provided. To that end, the revised TEN-T Regulation includes incentives to shift transport demand towards more sustainable modes of transport, including towards SSS. The aim is two-fold: a) to increase the number of passengers travelling by rail through the development of a competitive and seamless high speed rail network throughout Europe; and b) to shift a substantial amount of freight onto rail, inland waterways, and SSS. This case focuses on the latter.

The EU's trans-European transport network policy is a key instrument for the development of coherent, efficient, multimodal, and high-quality transport infrastructure across the EU. It comprises railways, inland waterways, short sea shipping routes and roads linking urban nodes, maritime and inland ports, airports and terminals. It fosters the efficient transportation of people and goods, ensures access to jobs and services, and enables trade and economic growth. It strengthens the EU's economic, social and territorial cohesion and creates seamless transport systems across borders, without physical gaps, bottlenecks or missing links. It also aims to reduce the environmental impact of transport and to increase the safety and the resilience of the network. The TEN-T policy is based on Regulation (EU) No 1315/2013. This Regulation is currently being revised in order to make the network greener, more efficient and more resilient, in line with the European Green Deal and the Sustainable and Smart Mobility Strategy (SSMS).

Rules of the game

A comprehensive set of rules and regulations establish the legal and operational framework within which both public and private actors operate. These sets of rules ensure the efficient, safe, and sustainable functioning of maritime transportation in the region.

- The Trans-European Transport Network (TEN-T) Guidelines provide the overarching strategic framework for the development of transport infrastructure within the EU. These guidelines delineate priority corridors, including maritime routes, and define the criteria for funding eligibility, guiding the allocation of resources for Motorways of the Sea projects.[37]
- The Connecting Europe Facility (CEF) serves as the financial instrument supporting the implementation of the TEN-T guidelines. It provides funding for infrastructure

[37] The evolution of the Trans-European Transport Network (TEN-T) has been marked by several regulatory milestones. Initially adopted on 23 July 1996, Decision No 1692/96/EC established Community guidelines for the development of the network. Subsequent amendments were made, including Decision No 1346/2001/EC in May 2001 and Decision No 884/2004/EC in April 2004, which brought more fundamental changes to accommodate EU enlargement and shifts in traffic flows. In December 2013, the network was defined on three levels with Regulations (EU) 1315/2013 (TEN-T Guidelines) and (EU) 1316/2013 (Connecting Europe Facility 1), which introduced the Comprehensive network, Core network, and 9 Core network corridors. Further extensions and adjustments were made with Regulation (EU) 2021/1153 (Connecting Europe Facility 2) in July 2021. Lastly, in December 2021, the European Commission proposed a new Regulation on TEN-T guidelines (COM 2021/821), which includes dissolution of selected Core network corridors, integration of others, and creation of new aligned corridors.

projects aimed at improving connectivity and interoperability across different modes of transport, including maritime transport infrastructure in the North Adriatic.[38]

- The Combined Transports Directive promotes the development of combined transport, which integrates sea transport with other modes such as rail and road, fostering a multimodal approach to freight transport. This directive incentivizes the use of Motorways of the Sea as part of a sustainable and efficient transport system.
- The European Maritime Single Window Environment (EMSWe) streamlines administrative procedures for maritime transport by enabling electronic data exchange between ship operators and relevant authorities. This facilitates the efficient clearance of ships and cargo, reducing administrative burdens and enhancing the competitiveness of North Adriatic ports.[39]
- The European Customs Code establishes the legal framework for customs procedures within the EU, including those related to maritime transport. It ensures the smooth flow of goods through ports by harmonizing customs regulations and procedures, facilitating trade and economic integration.[40]
- The Port Services Regulation aims to improve the transparency and efficiency of port services by introducing common rules for the provision of port services and the financial transparency of port operators. This regulation establishes a framework for port services and sets common rules regarding financial transparency and charges for port services and infrastructure. It applies to various port services including bunkering, cargo-handling, mooring, passenger services, waste collection, pilotage, and towage, whether provided within the port area or on the waterway access to the port. This regulation promotes fair competition and enhances the attractiveness of North Adriatic ports for shipping companies and investors.[41]
- EU Competition Law safeguards fair competition within the maritime transport sector by prohibiting anti-competitive practices such as price-fixing and market-sharing agreements. This ensures a level playing field for all stakeholders operating in the North Adriatic, fostering innovation and efficiency.

National legislation on port ownership structure governs the ownership and management of ports within each EU member state. These laws determine the ownership models, governance

[38] The CEF Regulation (EU) No. 2021/1153 describes CEF as a financing instrument for the transport, energy and digital sectors and replaces Regulation 1316/2013 which covered the previous European financing period. The regulation describes the eligible actions, the technical requirements and sets the maximum co-financing rates.

[39] The European Parliament and the Council have issued on 20 June 2019 Regulation (EU) 2019/1239 establishing a European Maritime Single Window environment (EMSWe).

[40] The legal framework governing EU customs rules and procedures, including the Union Customs Code (UCC), comprises several key documents. These include Council Regulation (EEC) No 2913/92, Commission Regulation (EEC) No 2454/93, Regulation (EC) No 450/2008, the Transitional Delegated Act, and the UCC Work Programme. These documents collectively define the legal basis for customs operations within the EU, addressing aspects such as simplification, service, and speed while ensuring legal certainty, uniformity, and security.

[41] Regulation (EU) 2017/352 of the European Parliament and of the Council of 15 February 2017 establishing a framework for the provision of port services and common rules on the financial transparency of ports

structures, and regulatory frameworks for port authorities, influencing investment decisions and operational practices in North Adriatic ports.

Actors

The governance framework surrounding maritime transportation in the North Adriatic involves a diverse array of actors spanning from supranational entities to local stakeholders. At the forefront, the European Commission wields significant regulatory and decision-making authority, setting overall policy objectives, allocating funds, and guiding the implementation of programs like the Motorways of the Sea through its Directorate-General for Mobility and Transport (DG MOVE). Operating under DG MOVE, the CEF Coordination Committee oversees the implementation of projects funded by the Connecting Europe Facility (CEF), coordinating efforts while ultimately deferring to the European Commission's directives. The Innovation and Networks Executive Agency (INEA), an executive agency of the European Commission, assumes operational control in executing specific programs such as CEF projects while adhering to strategic guidance from the Commission.

Moreover, the European Short Sea Promotion Centres may hold influence in promoting short sea shipping as an alternative transportation mode, advocating for policies and strategies that align with EU objectives and member states' interests. EU Member States, including Italy, Croatia, and Slovenia, wield decision-making power concerning national priorities, project proposals, and alignment with EU strategies, influencing the development and implementation of MoS projects within their jurisdictions. Additionally, the MoS European Coordinator plays a crucial role in providing guidance and recommendations, leveraging expertise to foster cooperation among stakeholders.

Within the broader context of regional governance, EUSAIR Governing Bodies, including National Coordinators and Pillar 2 Coordinators, contribute to shaping priorities and strategies aligned with the EU Strategy for the Adriatic and Ionian Region (EUSAIR). Locally, the North Adriatic Ports Association (NAPA), representing key ports in the region, advocates for regional interests, while individual ports like Ravenna, Rijeka, Koper, Venice, and Trieste wield influence based on their economic significance and contributions to connectivity. Additionally, port authorities and governments, shipping companies, terminal operators, freight forwarders, shippers, stevedoring companies, logistics service providers, equipment suppliers, and investors and financiers collectively contribute to the operational dynamics of maritime transport, shaping the landscape of maritime transportation within the North Adriatic region.

Discourses

From MOS Coordination, the discourse underscores a comprehensive approach towards enhancing maritime transportation in the North Adriatic region. Sustainability stands as a foundational pillar, with the Motorways of the Seas initiative prioritizing the adoption of cleaner fuels, the integration of energy-efficient technologies, and modal shifts towards sea transport. This commitment to sustainability not only aligns with broader environmental objectives but also addresses the pressing need to reduce carbon emissions and mitigate ecological impact. Furthermore, efficiency and connectivity emerge as central themes, with the initiative advocating for the promotion of efficient, well-connected networks. By bolstering efficiency and connectivity, MoS seeks to enhance European competitiveness while concurrently alleviating road congestion, offering a sustainable solution to burgeoning transportation challenges. Moreover, the discourse highlights the importance of regional cohesion,

emphasizing MoS as a catalyst for linking less developed areas to major corridors and ports. This strategic integration fosters economic development and social inclusion, leveraging maritime routes to promote regional prosperity. Lastly, safety and security in maritime transport are underscored as paramount considerations, with stringent measures in place to prevent accidents and respond effectively to emergencies. These multifaceted approaches collectively reflect MoS's commitment to sustainable, efficient, and secure maritime transportation in the North Adriatic region.[42]

From the perspective of the European Union Strategy for the Adriatic and Ionian Region (EUSAIR), several key discourses emerge, reflecting a holistic approach towards fostering regional development and connectivity. Economic Development and Trade take precedence, underscoring the economic significance of the Adriatic and Ionian Seas. The focus is on augmenting container traffic and enhancing the competitive position of North Adriatic ports, aligning with broader economic imperatives and regional development goals. Furthermore, Infrastructure Development and Integration are emphasized, advocating for the modernization of intermodal ports to integrate maritime transport seamlessly with rail and road networks. This entails a commitment to innovation, modernization, and the reduction of bureaucratic burdens, aiming to enhance efficiency and facilitate smoother cargo movement across transport modes.[43]

Moreover, sustainability and safety measures are paramount, reflecting a commitment to coherent sustainable transport plans, air quality initiatives, and ensuring safe maritime traffic. Addressing challenges such as outdated monitoring systems, security concerns, and invasive species control are imperative in ensuring the long-term viability and resilience of maritime transport within the region. Intermodal Connectivity and Regional Accessibility emerge as critical themes, highlighting the importance of seamless connections through road, rail, and air networks. By addressing issues related to railway reform, border-crossing delays, and regional flight connections, EUSAIR aims to enhance regional accessibility and facilitate smoother transport flows.

Collaboration and Harmonization are encouraged among port authorities, shipping companies, and stakeholders, emphasizing the importance of harmonizing processes and attracting traffic. Improvements in traffic monitoring systems and harmonized procedures are pivotal in optimizing the region's transportation capabilities and promoting economic growth. Additionally, Sustainable Logistics and Environmental Responsibility are underscored, advocating for the adoption of clean shipping technologies and environmentally friendly practices. Encouraging green initiatives in ports, such as power supply from shore and cleaner machinery, reflects a commitment to responsible stewardship and sustainability.

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[42] Shaping the future of the European Maritime Space 2nd MoS Detailed Implementation Plan 2022 (Kurt Bodewig) available at https://transport.ec.europa.eu/document/download/cc1df738-c919-4fd7-a9aa-8bf0f644afff_en?filename=2022-mos-dip.pdf

[43] Commission of the European Communities. (2020, February 4). Commission Staff Working Document: Action Plan Accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions concerning the European Union Strategy for the Adriatic and Ionian Region SWD(2020) (2020)57final. Retrieved from [https://www.adriatic-ionian.eu/wp-content/uploads/2020/04/EUSAIR-SWD-2020.pdf]

Lastly, Tourism and Economic Advantages are highlighted, recognizing the symbiotic relationship between ports and tourism. The discourse emphasizes the need for improved connections within the region and with the islands, addressing challenges related to tourism seasonality, and exploring the potential economic benefits of maritime connections. This multifaceted approach reflects EUSAIR's commitment to fostering sustainable economic growth, enhancing regional connectivity, and leveraging maritime resources to unlock the region's full potential.

Power resources

Financial resources are essential for funding the development and maintenance of maritime infrastructure, such as port facilities, terminals, and navigational aids. Funding sources include public sources like EU grants, national government budgets, and private investments from shipping companies, terminal operators, and investors. These resources enable the realization of projects outlined in the Trans-European Transport Network (TEN-T) Guidelines and the Connecting Europe Facility (CEF), facilitating the modernization and expansion of port facilities, enhancing connectivity, and promoting sustainable transport solutions.

Skilled personnel are indispensable for the efficient operation and management of maritime transport services in the North Adriatic. From port authorities and shipping companies to logistics firms and regulatory bodies, a diverse workforce with expertise in maritime logistics, navigation, customs procedures, and regulatory compliance is required. Training programs, knowledge-sharing platforms, and partnerships between educational institutions and industry stakeholders play a pivotal role in nurturing talent and fostering innovation within the maritime sector.

Port fees, levied by port authorities, constitute a significant source of revenue for port operations and infrastructure development. These fees include vessel docking fees, cargo handling charges, pilotage fees, and port dues. By aligning port fees with the costs of providing services and maintaining infrastructure, port authorities ensure the financial viability of port facilities while maintaining competitiveness in the global maritime market. Moreover, transparent and predictable fee structures attract shipping companies and investors, fostering confidence and facilitating long-term partnerships in the development of maritime routes.

Public-private partnerships (PPPs) are collaborative arrangements between public entities, such as port authorities or governments, and private sector stakeholders, including terminal operators, shipping companies, and investors. PPPs leverage the strengths and resources of both sectors to finance, develop, and operate port infrastructure and services. Through concession agreements, joint ventures, or build-operate-transfer (BOT) models, PPPs enable the mobilization of private capital for port expansion projects, such as the construction of container terminals, ro-ro facilities, and logistics centers. By sharing risks and responsibilities, PPPs promote efficiency, innovation, and sustainable growth in the maritime sector.

EU funding programs, such as the Connecting Europe Facility (CEF) and the European Structural and Investment Funds (ESIF),[44] provide financial support for port infrastructure

[44] Regulation (EU) 2021/1058 of the European Parliament and of the Council of 24 June 2021 on the European Regional Development Fund and on the Cohesion Fund. ESI Funds 2021-2027 set out

projects that contribute to the development of the Trans-European Transport Network and the Motorways of the Sea concept. These programs offer grants, loans, and guarantees to eligible projects aimed at enhancing port connectivity, efficiency, and environmental sustainability. By tapping into EU funding opportunities, port authorities and stakeholders can access additional resources to modernize infrastructure, implement digital solutions, and comply with regulatory requirements, thereby strengthening the competitiveness of North Adriatic ports and supporting regional economic development.

Environmental and green financing mechanisms, such as green bonds, carbon pricing mechanisms, and environmental impact funds, incentivize investments in sustainable port development and eco-friendly maritime transport solutions. Port authorities can leverage these mechanisms to finance projects that reduce emissions, improve energy efficiency, and mitigate environmental impacts associated with port operations and shipping activities. By integrating environmental considerations into investment decisions, ports can enhance their resilience to climate change, meet regulatory requirements, and enhance their reputation as responsible stewards of the marine environment.

4.3.2 How the EGD influences the dynamics within the MLMGA of Motorways of the Sea in the Adriatic Sea

There are two different sets of dynamics happening in the arrangement, as it is comprised of a public layer and a private layer. While Motorways of the Sea are a programme for maritime connections at sea, these are highly dependent on infrastructure for ships to berth and distribute cargo on the hinterland, see Figure 3.

The public layer is rule driven, with institutions setting goals and targets to further political objectives. It is the broader strategy of the EU that influences where the funding for infrastructural development should go (CEF funding). Each project is subject to public consultation, thus allowing private actors to influence the outcome of the process.

The private layer is rather resource and actor driven but partly constrained by the public policy objectives set in the other layer. It also influences that policy making as industry groups (e.g. European Shippers Council, European Sea Port Organization, Federation of Inland Ports, European Community Shipowner's Association, European Transport Workers' Federation)

common provisions for seven shared management funds at EU level: - CF: Cohesion Fund - EMFF: European Maritime and Fisheries Fund - ERDF: European Regional Development Fund - ESF+: European Social Fund Plus - AMIF: Asylum and Migration Fund - ISF: Internal Security Fund - BMVI: Border Management and Visa Instrument. Five main objectives (also designated as PO, Policy Objectives) determine the development of ESI Funds in 2021-2027: - A smarter Europe, through innovation, digitisation, economic transformation and support to small and medium-sized businesses (PO 1); - A greener, carbon free Europe, implementing the Paris Agreement and investing in energy transition, renewables and the fight against climate change (PO 2); - A more connected Europe, with strategic transport and digital networks (PO 3); - A more social Europe, delivering on the European Pillar of Social Rights and supporting quality employment, education, skills, social inclusion and equal access to healthcare (PO 4); - A Europe closer to citizens, by supporting locally-led development strategies and sustainable urban development across the EU (PO 5).

lobby lawmaking institutions of Member States (namely those of EUSAIR/NAPA Ports) and the EU Commission directly.

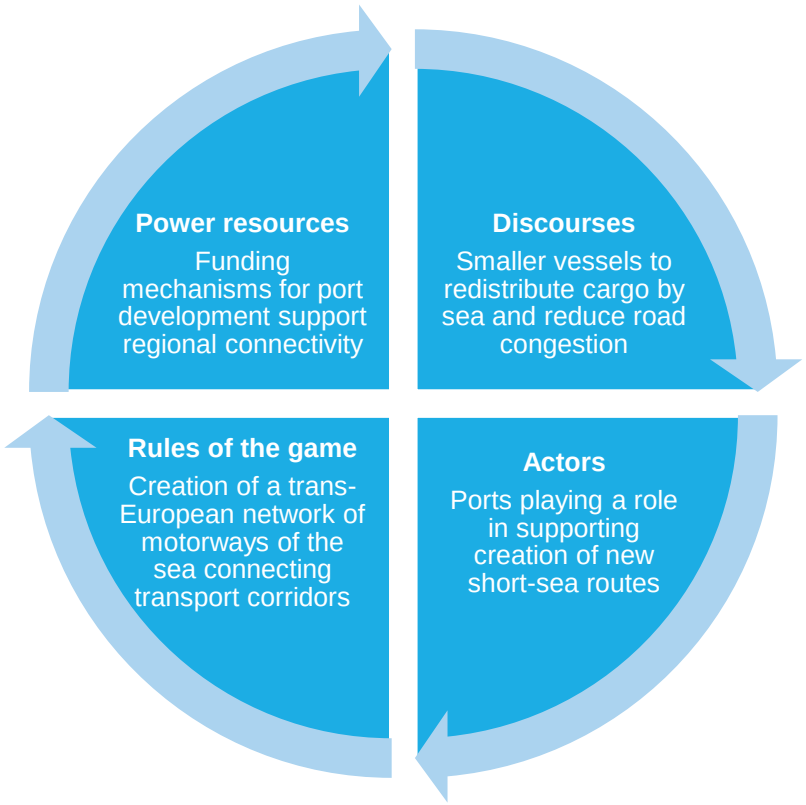

FIGURE 3 NEW DYNAMICS IN THE MLMGA FOR MOTORWAYS OF THE SEAS IN THE ADRIATIC SEA

The Commission proposed a revision of the TEN-T Regulation of 2013 to align with the European Green Deal and Sustainable and Smart Mobility Strategy, aiming to cut transport emissions by 90%. It emphasizes enhancing connectivity, resilience, and shifting towards sustainable transport modes, with a focus on urban mobility. The proposal aims to improve safety, sustainability, and efficiency, encouraging rail and waterway transportation for both passengers and freight. Quality standards would be upgraded, including faster train speeds, improved navigation conditions, and enhanced trans-shipment terminals. The introduction of an extended core network by 2040 and the merging of core network corridors with rail freight corridors are proposed. In response to geopolitical events, the proposal suggests extending corridors to Ukraine and Moldova and standardizing the railway gauge for interoperability. The legislative process involves adoption by the European Parliament and Council, following an evaluation and public consultation to align with evolving EU policies.

4.3.3 Drivers and challenges

1. **Economy of Scale (Regional Development):**
    - *Driver:* Ports serve as crucial nodes in maritime transport networks, facilitating economies of scale through efficient handling of larger vessels and increased cargo volumes.
    - *Challenge:* While larger vessels can enhance efficiency, smaller ports may require significant investments in infrastructure and equipment to accommodate them. Balancing the benefits of economies of scale with the costs of port upgrades is essential for sustainable regional development.
2. **Alternative Fuels (Batteries, Methanol):**
    - *Driver:* Ports play a pivotal role in the adoption of alternative fuels by providing refueling infrastructure and incentivizing sustainable practices among shipping companies.
    - *Challenge:* Port authorities must invest in alternative fuel infrastructure, such as charging stations for electric vessels or storage facilities for methanol. Ensuring the compatibility of alternative fuels with existing port operations and addressing safety regulations are critical challenges.
3. **Autonomous Ships (Fully, or Remotely Controlled):**
    - *Driver:* Ports serve as hubs for the integration of autonomous shipping technology, providing testing grounds, regulatory oversight, and maintenance facilities.
    - *Challenge:* Port authorities and regulatory bodies must develop frameworks to certify and monitor autonomous vessels' safety and performance. Additionally, investing in the necessary infrastructure, such as automated berthing systems and data connectivity, is essential for supporting autonomous operations.
4. **Digital Transformation:**
    - *Driver:* Ports leverage digital technologies to optimize operations, enhance cargo tracking and security, and improve the efficiency of vessel turnaround times.
    - *Challenge:* Port authorities must invest in digital infrastructure, such as smart container terminals and automated cargo handling systems, to capitalize on the benefits of digital transformation. Ensuring data security and interoperability among different digital systems are key challenges in this process.
5. **Smaller Vessels to Redistribute Cargo:**
    - *Driver:* Ports accommodate a diverse range of vessel sizes, enabling the efficient redistribution of cargo to smaller ports and inland destinations.
    - *Challenge:* Optimizing port operations to handle a mix of vessel sizes while maintaining efficiency and cost-effectiveness requires strategic planning and investment. Coordinating schedules and services to meet the needs of smaller vessels and regional supply chains is essential for maximizing port capacity utilization.

6. **Connection to Inland Waterways (River-Sea Vessels):**
    - *Driver:* Ports serve as interfaces between maritime and inland transport networks, facilitating the seamless transfer of goods between sea-going vessels and river-sea vessels.
    - *Challenge:* Enhancing connectivity between ports and inland waterways requires investments in navigational infrastructure, such as locks and dredging, to accommodate larger vessels. Harmonizing regulations and procedures for intermodal transport operations is crucial for promoting efficient and sustainable freight movement.

4.4 Conclusions regime complex Maritime Transport

The maritime transport governance landscape within the EU is undergoing a profound transformation, catalysed by the imperatives set forth by the European Green Deal. This evolution encompasses both EU-wide initiatives and regional endeavours, such as the development of the Motorways of the Seas in the North Adriatic Sea. As we analyse the drivers and challenges shaping this transition, it becomes evident that concerted efforts are required to steer the maritime sector towards decarbonization and sustainability.

Drivers:

- **EU Discourse Shift:** The EU's pivot from a discourse centered on energy efficiency to one focused on decarbonizing shipping serves as a pivotal driver. The EGD has translated this shift into tangible decarbonization targets, providing a clear trajectory for the maritime industry.
- **Establishment of New Rules:** The EU's proactive approach in establishing new regulations to achieve decarbonization targets is another significant driver. These regulations, addressing both port operations and vessel activities, signal a commitment to holistic emissions reduction within the maritime sector.
- **Growing Funding for Innovation:** The increasing funding and activities surrounding technological innovation represent a crucial driver. This growing resource allocation fuels advancements aimed at sustainable shipping practices, accelerating the transition towards cleaner and greener solutions.
- **Adoption of New Logistic Tools:** The emergence of innovative logistic tools tailored for short sea shipping, utilizing smaller vessels, presents an opportunity to drive the shift from road and rail to sea transport. While this promotes sustainability, it also raises considerations regarding the potential increase in shipping volume.

Challenges:

- **Technical and Capital Intensive Nature:** The high technical and capital-intensive nature of the maritime industry poses a significant challenge. Developing technological innovations for decarbonization requires substantial funding and time, raising questions about who bears the costs and responsibilities.
- **Lack of Predictability in Rules:** The rapid pace of rule development and the lack of predictability in regulatory frameworks pose challenges. Varying foci and contradictory directions, such as the shift away from LNG, hinder investments in renewable energy for shipping and port infrastructure.

- **Regulatory Evasion Potential:** The global nature of shipping introduces challenges related to regulatory enforcement and the potential for evasion. Trading with ports close to the EU presents opportunities for circumventing EU regulations, necessitating international cooperation and robust enforcement mechanisms.
- **Logistical Tool Adaptation Lag:** Despite the introduction of logistical tools promoting maritime transport, there's a noticeable lag in adaptation. The time between the availability of new opportunities and their implementation slows down the transition to sustainable shipping practices.
- **Lack of Clarity in Rules:** Uncertainty persists regarding the requirements and possibilities for compliance with regulations. Efforts to harmonize CO2 calculations and reporting aim to address this challenge, enhancing transparency and facilitating compliance within the maritime sector.

In navigating these challenges and leveraging the drivers of change, collaborative and innovative approaches are imperative. By fostering partnerships, investing in research and development, and ensuring regulatory coherence, we can overcome obstacles and chart a course towards a more sustainable future for maritime transport within the EU and in regional contexts such as the North Adriatic Sea.

5 Regime complex Marine Life

5.1 European Green Deal developments around Marine Life

Within the marine life regime complex, the central EGD-related development is the **EU Biodiversity Strategy for 2030**[45] that sets out the 'high-level strategy' to reverse biodiversity loss driven by changes in land and sea use, overexploitation of resources, climate change, pollution, and invasive alien species[46]. It reflects the broader objectives of the EGD, particularly focusing on the EGD element **Preserving and restoring ecosystems and biodiversity**.

The responsibility for implementing the EU Biodiversity Strategy for 2030 falls to the EU and its institutions as well as the member states (MS). The European Commission (EC) provides guidance, sets criteria, and helps to ensure that targeted goals, such as achieving the 30% protected area target, are met. The Strategy also aims to enhance environmental justice in national courts for individuals and the civil society, thus supporting the civil society's watchdog role over compliance. This approach also includes broadening the involvement of NGOs and launching new initiatives focused on sustainable corporate governance with industry.

Central to the realisation of the EU Biodiversity Strategy for 2030 are five key instruments, identified through the mapping exercise for the Deliverable 2.1. These include the Habitats Directive and Birds Directive, which form the foundation of the EU's nature conservation policy; the Marine Strategy Framework Directive (MSFD), which sets a framework for marine environmental protection; the Common Fisheries Policy (CFP), which governs sustainable fishing; and the EU Action Plan: Protecting and restoring marine ecosystems for sustainable and resilient fisheries ('the Marine Action Plan')[47], which aims to strengthen the linkages between the EU fisheries and nature conservation policies.

The Marine Life regime complex takes marine ecosystems and their protection as a starting point, but the two case studies (seabed integrity in the Baltic Sea and Marine Protected Areas in Italy) do not only focus on nature conservation policies and their implementation. The focus is, in fact, on the management of human activities and how they are aligned with nature conservation objectives.

Commercial fishing is a human activity that is addressed in both cases. Within the EU, fisheries are governed through the CFP. The goal of the CFP is to ensure long-term sustainability for fisheries and aquaculture, the availability of food supplies and a fair standard of living for fisheries and aquaculture communities. In particular, CFP's commitment to managing fish stocks sustainably directly supports the EU Biodiversity Strategy for 2030's targets. By regulating fishing gear, and the implementation of an ecosystem-based approach to fisheries management, the CFP could be vital in promoting marine biodiversity and the resilience of marine ecosystems.

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[45] European Commission (2020a). EU Biodiversity Strategy for 2030. Bringing nature back into our lives. COM(2020) 380 final. Brussels: European Commission.

[46] The Nature Restoration Law has not been included among the key instruments as it has not yet been finally approved at the time of writing.

[47] European Commission (2023a). EU Action Plan: Protecting and restoring marine ecosystems for sustainable and resilient fisheries. COM/2023/102. Brussels: European Commission.

The EC launched the Marine Action Plan in February 2023 to support the implementation of the biodiversity strategy in European fisheries. It aims to strengthen technical and other measures to reduce incidental catch and fisheries' impacts on marine ecosystems. Protection of benthic habitats in marine protected areas (MPAs) is one of the key targets. It also encourages the creation of MPAs to protect important fish spawning sites and nursery areas. It is important also for the MSFD as it supports the achievement of Good Environmental Status by addressing the bycatch of sensitive species and impacts on the seabed.

The EGD includes also the Farm to Fork Strategy (Farm2Fork)[48] that promotes a transition to a sustainable food system, to ensure food security, nutrition, and public health, making sure that everyone has access to sufficient, safe, and nutritious food/fish. It aims to preserve the affordability of food while generating fairer economic returns to producers. This requires ensuring that the food chains have a neutral or positive impact on the environment and resources on which the food system depends.

5.2 Case 3 Seabed integrity of the Baltic Sea

This case study investigates the practices and related challenges to implementing regional sea and EU commitments to protect benthic habitats from loss and disturbance. Loss and disturbance of the seabed is caused by multiple human activities of which PERMAGOV will focus on dredging (and related deposit of substrates) and bottom trawling due to their high impact and/or large geographic extent of the activity in the Baltic Sea.

The protection of benthic habitats from loss or disturbance is a complex task because there are several human activities that cause environmental pressures on the seabed (see Figure 4). This also adds to the complexity of governance arrangements, and by choosing only one human activity we would not be able to address this complexity properly. By choosing dredging, depositing substrates, and trawling, we cover many aspects of the complexity and address environmental pressures that cause the loss and disturbance of benthic habitats.

The selection of the two topics allows us to study different constellations of multi-layered governance. Fisheries governance is largely EU-centered, while the governance of dredging is centered more on the national level. Even though the center of governance may be different, both cases have governance structures and related processes on multiple levels of governance, including at the regional sea level through HELCOM.

[48] European Commission (2020b). A Farm to Fork Strategy, for a fair, healthy and environmentally-friendly food system. COM(2020) 381 final. Brussels: European Commission.

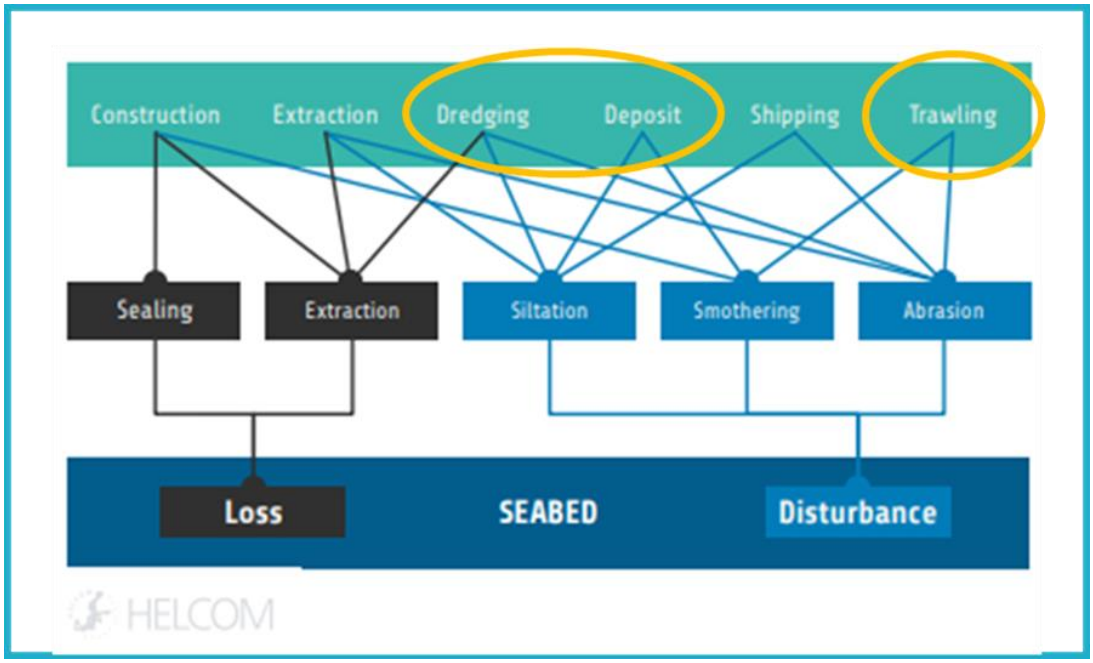

FIGURE 4 MAIN HUMAN PRESSURES ON SEABED INTEGRITY (IN THE MIDDLE) AND TYPICAL HUMAN ACTIVITIES THAT CAUSE THEM (ON TOP). THIS CASE STUDY FOCUSES ON DREDGING AND DEPOSITS, AND TRAWLING

There are three recent initiatives that aim to change or add new elements to the governance arrangements of dredging and bottom trawling: threshold values for seabed integrity[49], the EC proposal for a new action plan to implement nature conservation measures in fisheries ('Marine Action Plan')[50], and the HELCOM's plan to achieve coordinated implementation of seabed protection in the Baltic Sea (Action S65 in the Baltic Sea Action Plan)[51].

The EU published in 2023 recommendations for "Setting of threshold values for extent of loss and adverse effects on seabed habitats" ('the threshold values'). Setting of the threshold values is part of common implementation strategy for the MSFD. In an interview with an EU commission officer, it was brought out that further specification on the threshold values can be expected in the coming years. The threshold values may have implications for both dredging and bottom trawling. The EU Biodiversity Strategy is the central EGD element in the Marine Life regime. The EU Commission launched in 2023 the Marine Action Plan to reduce the impacts of fishing on marine ecosystems, especially on seabed. The bottom trawling case links also to the EGD's sustainable food systems strategy (Farm2Fork) even though that strategy is not very precise on how to manage the environmental impacts of fisheries.

HELCOM's Baltic Sea Action Plan (BSAP)[52] includes in its 2021 update an action S65 "By 2026 implement a common approach to address and where possible minimize the loss of and

[49] TG Seabed (2023). Setting of EU Threshold Values for extent of loss and adverse effects on seabed habitats. Recommendations from the Technical Group on Seabed Habitats and Sea-floor Integrity (TG Seabed). MSFD Common Implementation Strategy. Brussels: European Commission.
[50] European Commission (2023a)
[51] HELCOM (2021). Baltic Sea Action Plan. 2021 update. Helsinki: Baltic Marine Environment Protection Commission.
[52] HELCOM (2021).

disturbance to seabed habitats caused by human activities" ('the action S65') through which HELCOM is seeking a coordinated governance response to strengthen the protection of benthic habitats. Actual implementation of action S65 has not yet started, but when it is started, support to its implementation is one of the policy-relevant results expected from this case study. The case study identifies gaps and barriers to successful implementation, and designs and develops proposals for collaborative and/or digital strategies to tackle these institutional challenges.

There is also global level regulation stipulated through the London Convention [53] and respective London Protocol[54] on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter that is relevant for the dredging dimension of the case. Even the London Convention ('LC') and London Protocol ('LP') focus on dumping ('deposit' in Figure 4) it applies to dredging, since these activities are connected: the material dredged from the bottom of the sea is often completely or partially dumped in the sea. Dredging and dumping are closely linked also in the HELCOM work, exemplified, for instance, in the existence of a dedicated expert group on Dredging/depositing operations at Sea (EG DreDS). The connection between dredging and dumping is included in the EU work on the MSFD implementation. For instance, TG Seabed's[55] recent document "Elaboration of Guidance to the assessment of sea-floor integrity under the EU Marine Strategy Framework Directive" sees deposition caused "directly by human activities such as dredge disposal or indirectly through the modification of hydrodynamics"[56]

The case study addresses governance arrangements pertaining to two of the human activities, namely dredging and bottom trawling, which cause several of the main pressures on the integrity of seabed indicated in Figure 4. The three new initiatives are taken as an example of changes that are aimed at in the EGD.

In the following text, the two governance arrangements are presented by first focusing on the governance of dredging and after that on the governance of bottom trawling. We present key elements of the governance arrangements dimension and highlight also how the new initiatives can bring changes into the governance arrangements.

Even though the governance of dredging and bottom trawling, respectively, are organized differently and have little interaction with each other traditionally, they share a common position in the new initiatives pursued by the EU and HELCOM policies. A more holistic, ecosystem-based perspective that has strengthened in recent years underlines the importance of benthic habitats to the whole ecosystem and also linking the two human

[53] London Convention (1972). Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. London: International Maritime Organization. https://www.imo.org/en/OurWork/Environment/Pages/London-Convention-Protocol.aspx

[54] London Protocol (1996). 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (as amended in 2006). London: International Maritime Organization.

[55] Technical Subgroup on seabed habitats and sea-floor integrity. An expert group that is supporting the EC in implementation of MSFD in relation to environmental status descriptor 6: Sea-floor integrity.

[56] TG Seabed (2024). Elaboration of Guidance to the assessment of sea-floor integrity under the EU Marine Strategy Framework Directive. MSFD Common Implementation Strategy. Brussels: European Commission.

activities that this case is focusing on. Their connection to the seabed integrity is depicted in Figure 4. The importance of benthic habitats was underlined in two interviews of EU commission officers whose work are related, respectively, to CFP (the Marine Action Plan) and to MSFD (seabed threshold values). In both interviews a holistic, ecosystem-based perspective that highlighted the importance of benthic habitats to marine ecosystem health and functioning was clearly brought out. An officer (whose work relates to MSFD) explained when commenting the Marine Action Plan's proposal to ban fishing in marine protected areas (MPA):

"…even for MPAs that are protecting birds, the sea floor is an important, is an essential component in that, because we have food web interactions, because this is how ecosystems work, they don't work separately one from the other. So again, I think we give legitimacy to these arguments to say, yes, all marine protected areas deserve […] to have their sea floor, their bases protected against adverse impacts."

The document[57] that presents the seabed threshold values also links the state of seabed habitats to the state of marine ecosystems in general: *"…seabed biodiversity should be restored to a good state in order to support the entire marine ecosystem and secure essential ecosystem services for human survival"* In the same document, the seabed threshold values are presented as relevant for the MSFD's Descriptor 1 (Biological diversity) and Descriptor 6 (Sea-floor integrity).

The marine action plan follows the same thinking: "Healthy seabed habitats are a key part of healthy marine ecosystems. Their rich biodiversity provides nursery and spawning grounds for many species and contributes to maintaining the structure and functioning of marine food webs and regulating the climate. Fishing using certain mobile bottom-contact gear (mobile bottom fishing), in particular bottom trawling, is among the most widespread and damaging activities to the seabed and its associated habitats."

5.2.1 The Governance arrangement of dredging in the Baltic Sea

Rules of the game

A general rule is that dredging (and dumping) is prohibited in national policies and by the London protocol, but derogations can be given. The existing policies are **mainly to stipulate the conditions for giving the derogations** and guiding dredging and dumping activities accordingly. Important factors to be considered while granting derogations are locations of protected areas, high nature values (habitats and species), other sea uses, neighbours, and transboundary impacts.

Rules of the game are given on multiple levels: London Convention ('LC') and London Protocol ('LP') provide global general guidance, the EU MSFD and its threshold values are at the EU level, HELCOM has recommendations and guidelines, and guidance and permits are granted at national or subnational levels.

[57] TG Seabed (2023), page 5

States have an obligation to report on large dredging and dumping projects to the London Protocol and HELCOM[58] (which manages LP reporting for its Contracting Parties) and on the state of the benthic habitats to the EU.

At intergovernmental levels (LC/LP and HELCOM) there are clear but slightly different rules for voting on decisions. In the London Protocol the voting rule of 2/3 majority applies, while HELCOM requires unanimous decisions.

National guidelines in Finland[59] and Sweden[60] (the only countries analysed so far) explain the rules of the game. They give a) detailed technical guidance, b) conditions and legal context for permitting and announcements, c) procedures. The Swedish guideline is more detailed. The guidelines are meant for both authorities and operators, but in both countries, there is also more specific guidance for the operators.

In Finland and Sweden, the approaches are on a general level similar:

- Larger projects (threshold is given) require an environmental permit with EIA and consultation, while in smaller projects a notification to local or regional authorities is enough, except in cases when severe environmental impacts are expected.
- Interestingly, there is a threshold value is for volume (m^3) of dredged or dumped masses in Finland and for area (m^2) in Sweden
- Both countries' guidelines refer to the LC, HELCOM and OSPAR policies/guidelines. The guideline in Sweden is quite detailed also in its handling of MSFD implementation. Finland's guideline only mentions the national laws that transpose the MSFD into Finland's legal practice.

The initiatives:

Application of the *MSFD seabed threshold values*[61] takes place mainly at the regional and national levels. The latter level is responsible for the implementation of the MSFD. For supporting the application of the threshold values the EC's "TG Seabed is putting together a roadmap to coordinate efforts at (sub)regional level that should lead, by 2025, to i) a subregional/regional/cross-regional consistent selection of indicators as well as ii) the development of consistent indicator values".

Due to the scale at which biogeographic variation in benthic communities is observed, regional sea 'subdivisions' are to be used for state assessment. This is likely to encompass the marine waters of several MS in an MSFD region or subregion. The process for defining assessment

[58] HELCOM (2015a). Management of Dredged Material. HELCOM recommendation 36/2 (amended 2020). Helsinki: Baltic Marine Environment Protection Commission.
HELCOM (2015b). HELCOM Guidelines for Management of Dredged Material at Sea and HELCOM Reporting Format for Management of Dredged Material at Sea (amended 2020). Helsinki: Baltic Marine Environment Protection Commission.
[59] Ministry of the Environment (2015). Sedimenttien ruoppaus- ja läjitysohje [Guideline on dredging and depositing sediments]. Ympäristöhallinnon ohjeita 1/2015. Helsinki: Ministry of the Environment.
[60] SWAM (2018). Muddring och hantering av muddermassor. [Dredging and handling of dredged material].Havs- och vattenmyndighetens rapport 2018:19. Gothenburg: Swedish Agency for Marine and Water Management.
[61] TG Seabed (2023)

areas for habitat assessment therefore needs cooperation among MS in each region or subregion, as has been initiated via several Regional Sea Conventions.

TG Seabed recognizes the need for more work to agree on the appropriate scales of assessment and the achievement of GES, the rules of integration of results at varying levels, and the reporting of results for assessments.

Actors

Contracting parties are key actors at the intergovernmental levels (London protocol and HELCOM), but for both organizations representing the environmental and industry views are invited as observers without voting rights. At the EU level the actors in formal decision making are the MS, the EC and the Parliament. To support the implementation of the MSFD, a dedicated technical expert group, TG Seabed, prepares background documents. The group consists of representatives of MS, environmental and industry organisations, Seas at Risk and European Dredging Association respectively, and of international organisations HELCOM, OSPAR, ICES and North Sea Regional Advisory Council.

States are the key actors. The EU MS are expected to apply the seabed threshold values. States are also responsible for reporting to the London Protocol, the EU and HELCOM levels, and the national level is also the level at which the permitting of large dredging and dumping projects take place.

Swedish and Finnish dredging guidelines identify relevant actors at the national and sub-national level. Finland's guideline was produced by a working group that consisted of environmental authorities at the national and regional levels and national level expert organizations, but not industry or environmental NGOs that were only given an opportunity to comment a draft.

Environmental permitting authorities, the authorities responsible for environmental supervising and monitoring as well as municipalities have important roles in national processes in both countries.

The national guidelines put the dredging operators in a key position expecting them to be aware of the legal requirements and to be accountable for the projects. Actors and coastal inhabitants possibly affected by the projects are mentioned as parties to be consulted and having a right to complaint in permit procedures.

The initiatives:

The threshold values document by TG Seabed describes actors mainly at the level of the EU and MS. It does not single out sectors or stakeholders. Other documentation by the TG Seabed[62] does analyse human activities responsible for the critical pressures on seabed, thus identifying sectors from which the key actors responsible for the pressures can be found.

[62] e.g. TG Seabed (2024).

Discourses

The dredging discourse has traditionally focused on pollution abatement and hazardous substances. This is reflected in both the London Convention/London Protocol and the original HELCOM Recommendation 36-2 from 2015 where physical disturbance is mentioned only briefly.

In contrast, the MSFD is much more concerned with the holistic impacts of human activities on the marine environment. The HELCOM's updated dredging guidelines from 2020 also adopt this perspective, indicating a change in the discourse.

The seabed threshold values introduced in 2023 specifies how much disturbance and loss of seabed would be allowed on the level of broad (benthic) habitat types. As the habitat types are geographically identifiable the threshold values introduce a more spatially specified management approach compared to the previous approach.

The national guidelines (Sweden and Finland) are concerned with both pollution and impacts on habitats and species. They underline risks and avoiding them as one of the key discourses. Both the Finnish and the Swedish guideline acknowledge that dredging causes damage to benthic habitats and can cause turbidity and siltation. Recovery of benthic habitat is highlighted as an important consideration. The Swedish guideline is very technical in its approach, including also lengthy references to the EU waste hierarchy while the Finnish guideline has a more environmental tone.

The initiatives:

The Seabed integrity threshold values are critical to the implementation of the MSFD and its holistic perspective. While the holistic discourse has been present for more than a decade now, it has not had the force of law in the same way as the LC/LP. Now that threshold values are adopted; their structure will likely reinforce the holistic discourse as it acquires clearer legal power. A draft guidance[63] for the assessment of the sea-floor integrity mentions dredging and dumping (deposit) as important causes of pressures on benthic habitats and species.

Power resources

At the international level, power lies strongly with States. The London Convention and the related London Protocol lay out prohibitions pertaining to dredging at the global level, but no provisions exist to compel compliance, and each State is responsible for its own enforcement. The MSFD does not give the same level of power to the States but, prior to the adoption of the seabed integrity threshold values, compliance could only be subjectively assessed.

In Finland, permitting authorities decide about permits or large projects. Regional environmental authorities have a say in the process, and affected parties can complain about and comment on a permit procedure). The Ministry of the Environment is the highest responsible authority. This applies to Sweden also in the sense that permitting authorities have the key power, but roles of other authorities in supervising and monitoring are clearly acknowledged.

[63] TG Seabed (2024).

Science organisations have expert power. In both countries the dredging guidelines have a very scientific and technical orientation. Thus they serve as important sources of information and give references to further technical guidance and information.

The rights owners of the coastal waters have a decisive role because projects need their acceptance. This applies both to Finland and Sweden where majority of coastal waters is in private ownership.

The initiatives:

The seabed integrity threshold values should be a powerful force for integrating dredging into a broader marine environmental management beyond pollution control. However, dredging may be such a small portion of seabed disturbance that the ultimate effects may not disrupt the current power dynamics. The actual implementation of the new threshold values at the national and regional level is still in progress and the EU is producing more detailed guidance as pointed out above.

5.2.2 The Governance arrangement of bottom trawling in the Baltic Sea

Rules of the game

The CFP sets the rules of the game rather extensively because the European common policies are governed directly by the EU. The CFP prescribes common rules adopted at the EU level which need to be applied by all MS. The MS have the responsibility of implementation, while the EU Commission monitors and coordinates the implementation.

The CFP stipulates clear assignments of tasks and responsibilities to the EC and MS, also concerning stakeholder consultation and the coordination, collection and management of scientific data. Rules are given also on financial assistance to the sector.

Detailed rules about the contribution and consultation support mechanisms such as the Scientific, Technical and Economic Committee for Fisheries (STECF) and Advisory Councils are determined in the CFP. In general, the official line of the EU fisheries policy is to enhance stakeholders' roles and initiative: "appropriate involvement of stakeholders, in particular Advisory Councils, at all stages from conception to implementation of the measures".

Coherence with other EU policies is also mentioned as important. The new documents and plans published in 2023 on the future of the CFP underline this need even more, and the Marine Action Plan gives concrete measures for practical policy coherence between fisheries and nature conservation policies.

The initiatives:

The Marine Action Plan does not aim to change the rules of the game by introducing new legislation. Its planned implementation is based on the existing rules that are to a large extent given in the CFP. The Marine Action Plan proposes a ban on bottom contacting mobile fishing (e.g. bottom trawling) in protected areas which would drastically change the current fishing practices. If the members states would implement such bans, the rules of the game were changed.

One structural change that the Marine Action Plan implies is the establishment of a joint special working group to coordinate between fisheries and nature conservation administrations. It started its work in October 2023. This could be seen as a potential change in the rules of the

game, if the working group enacts new actions, even though it is not a decision-making body. The Baltic Sea Advisory Council (BSAC) welcomes the creation of the joint special group that matches the past BSAC recommendations to bridge the environmental and fisheries ministries work across MS. The BSAC stands ready to act as observer to this joint special group.

Seabed integrity threshold values are expected in the Marine Action Plan to give guidance on the implementation of fisheries measures to reduce the impact of fishing on the seabed.

Actors

Decisions on issues related to bottom trawling are taken by the EU Council (consisting of MS), the EC, and the Parliament.

The EC and the MS are the main implementing actors. Advisory Councils and regional fisheries groups provide the EC and the MS with recommendations on fisheries management. Fishers, producer organizations, and other stakeholders and their collaboration are mentioned as actors to develop local solutions. The Marine Action Plan encourages fishers as "stewards of the seas". Coastal communities are mentioned as beneficiaries (or victims if stocks collapse).

Scientific community (especially STECF, ICES and EEA) is referred to as knowledge providers.

The initiatives:

The Marine Action Plan does not change the picture of actors that much. The same actors are mentioned as in the general fisheries policy documents. However, the Marine Action Plan does add a new platform for actors to discuss, the joint special group for fisheries and environmental administrations and stakeholders.

The seabed integrity threshold values do not determine any actors as it is a rather technical document. However, it was produced by TG Seafloor that is a technical expert group that helps the implementation of the MSFD (descriptor 6) being itself a collection of key expert actors.

Discourses

The overall EU fisheries policy discourse is that the CFP shall ensure that fishing and aquaculture activities are environmentally sustainable in the long-term and are managed in a way that is consistent with the objectives of achieving economic, social and employment benefits, and of contributing to the availability of food supplies.

The environment is emphasized, but in the Fisheries and Ocean Pact[64], which explains the EC's ideas for the new directions to the CFP, it is underlined that still many issues need to be tackled and that there is a need for the full implementation of the existing legislation in fisheries and better coordination between relevant environmental policies. More science is needed to help fisheries to respond to emerging problems.

[64] European Commission (2023b). The common fisheries policy today and tomorrow: a Fisheries and Oceans Pact towards sustainable, science-based, innovative and inclusive fisheries management. SWD(2023) 103 final. Brussels: European Commission.

Regionalization of decision-making and continuing improvements in stakeholder engagement are a common theme visible in all fishery policy documents. Participation is considered to increase ownership and stewardship.

The initiatives:

The Marine Action Plan underlines a sense of urgency in tackling marine environmental issues and expediate the implementation of the existing community legislation and policies. It states that “healthy seabed habitats are a key part of healthy marine ecosystems." Similarly strong emphasis on the benthic ecosystems in particular is not given in the other fishery policy documents. Mobile bottom fishing is described and addressed as damaging activity, which is also acknowledged in the other documents.

The Marine Action Plan can be seen as introducing much stronger environmentalist discourse when it proposes a ban on bottom trawling in protected areas. This would be a drastic change in the current practice. The Baltic Sea Advisory Council states that:

“*The BSAC agrees that the new environmental approach coming from the Action Plan … provides an opportunity to improve the fish stocks. However, if poorly implemented it poses a high risk of a significant impact on the fishery sector. This action plan will produce structural changes, with social and economic impacts on operators and fishing communities throughout the entire supply chain. Therefore, the measures of the action plan cannot be implemented with urgency if a fair transition is sought*.”

The BSAC does acknowledge, though, a possibility of benefits to vessels using passive gear that the ban would not apply to. The BSAC also asks the EC to look into all large-scale extractive activities (offshore renewables including supporting structures, gravel extraction etc.). As the BSAC consists of both fisheries and environmental interest groups the BSAC position paper on the Marine Action Plan states that “some members welcome the action aimed at phasing out of mobile bottom fishing in Natura 2000 sites and MPAs, and propose to phase out all large-scale extractions (not only mobile bottom contacting gear fishing) from these areas”.

Seabed integrity threshold values mentions fishing only once as a reference to respective ICES advice on economic impacts of reduction of bottom trawling[65]. The threshold values document discusses extensively human pressures, but only on a general level. A new daft guidance[66] for the assessment of the sea-floor integrity mentions fishing and trawling as important causes of pressures.

Power resources

The power lies within the EU that is the actor to supervise and take action, while MS have an implementation responsibility.

More initiative has been given to fishers and to regional level in the latest CFP reform (2013), but mainly on implementation and producing solutions.

[65] ICES (2021). EU request on how management scenarios to reduce mobile bottom fishing disturbance on seafloor habitats affect fisheries landing and value. ICES Special Request Advice. Copenhagen: International Council for the Exploration of the Sea.

[66] TG Seabed (2024)

The European Maritime, Fisheries and Aquaculture Fund (EMFAF) is underlined in the EU documents as a key funding mechanism, but the documents also call for the MS to allocate adequate resources to the regional groups and local action.

Research, data, and scientific knowledge production are highlighted as important resources. Development of digital knowledge systems is highlighted in the Fisheries and Ocean Pact[67] with a special reference to the Digital Twin of the Ocean.

The initiatives:

The Marine Action Plan also sees that EU has the power based on the CFP and does not aim at any changes in that. Implementation duties of the Marine Action Plan are assigned to the MS, although it remains to be seen to what extent the MS will comply with this legally soft instrument.

Generation of new scientific information is foreseen. It is needed as there are still uncertainties about the effectiveness of the proposed measures.

Economic support will be channelled to fishing communities through the EMFAF (and other structural funds). The Baltic Sea Advisory Council welcomes the action to achieve the take-up of sufficient funding to support projects on less damaging fishing techniques and energy transition.

5.2.3 How the EGD influences dynamics within the governance of dredging and bottom trawling in the Baltic Sea

The Marine Action Plan and the seabed integrity threshold values are the recent EGD related initiatives that we analyse from the perspective of their potential impact on policy innovation in the existing governance arrangements for dredging and bottom trawling. The Marine Action Plan is linked directly to the governance of bottom trawling, while the seabed threshold values relate to both bottom trawling and dredging with a stronger relevance for the governance of dredging. The implementation of HELCOM BSAP's task S65 to develop a common approach for the protection of seabed is a regional sea level initiative indirectly linked to the EGD. Its implementation has not yet started.

Introduction of the threshold values for seabed integrity in 2023 is possibly changing the governance of dredging. The threshold values specify the acceptable levels of harm caused to the seabed. In the coming years more specifications on indicators will be given. The threshold values will be applied to 'broad benthic habitat types' that can be geographically identified. In this respect it is a step towards a more spatially specified implementation of the MSFD. Figure 5 and 6 summarise key new elements in the governance arrangements.

The introduction of the seabed integrity threshold values can generate two dynamic changes in the governance arrangements. One is that they further strengthen the ecosystem perspective in the management of dredging that originally has been leaning more towards pollution abatement and hazardous substances. This strengthens the respective discourse on the topic that may have implications on the relationships between actors, emphasise

[67] European Commission (2023b).

ecosystem-related elements in the rules of the game, and change relative power of expertise from pollution further to ecosystems.

The other dynamic change stems from the very technical and scientific nature of the threshold values which requires a certain type of expertise and knowledge provision, as well as makes ecosystem experts even more relevant than before. The strengthening of the scientific-technical dimension of management does not support contribution and participation of non-expert actors.

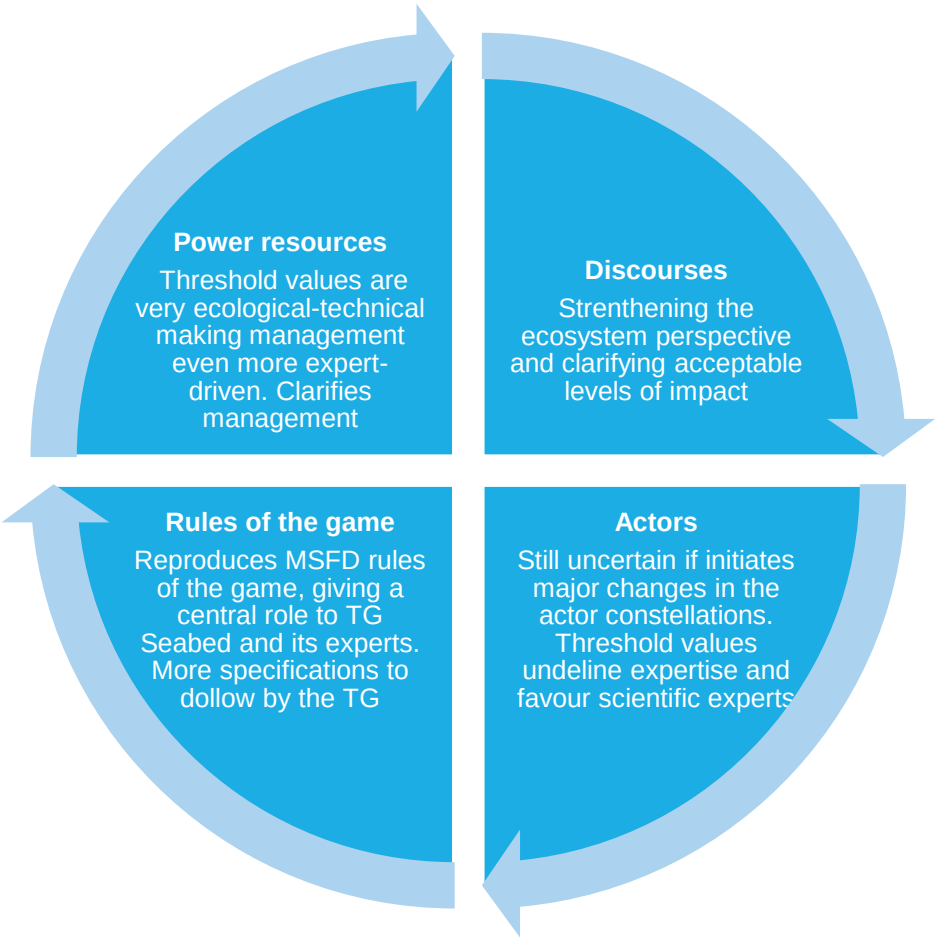

FIGURE 5 NEW DYNAMICS IN THE MLMGA FOR DREDGING INITIATED BY THE SEABED THRESHOLD VALUES

The Marine Action Plan is the EC's document to initiate measures to limit the impacts of fishing on marine ecosystems. It aims to facilitate the implementation of the EU Biodiversity Strategy in the EU fisheries management. The legal basis for the implementation of the measures relies largely on the CFP. Here we focus on those elements of the Marine Action Plan that relate to bottom trawling and the protection of benthic habitats.

The Marine Action Plan strengthens the discourse on trawling's impacts on benthic habitats and the need to limit those. The Marine Action Plan proposes a ban on bottom touching mobile fishing in marine protected areas, which is a drastic change to the current situation. Even though the Marine Action Plan builds strongly on the existing legislation and governance arrangements, the proposed ban on fisheries is a big change. If handled badly this can disturb current relations between the actors. In the Baltic Sea Advisory Council's (BSAC) position

paper on the action plan, a concern about the socio-economic consequences of the ban is clearly stated. The BSAC proposes a careful and step-wise approach to the implementation to avoid the worst consequences. On the other hand, the environmentalist groups of the BSAC are in favour of the new measures.

There are also some balancing elements in the Marine Action Plan that can affect the functioning of the whole governance arrangement. One is the establishment of a joint special working group for the fisheries and environmental sectors to follow up and support the implementation of the action. It can create a platform for a constructive and balancing dialogue between the interest groups as indicated in the BSAC position paper. Another possibly balancing element is the redirection of funds for research on new technology and support to the fishery sector.

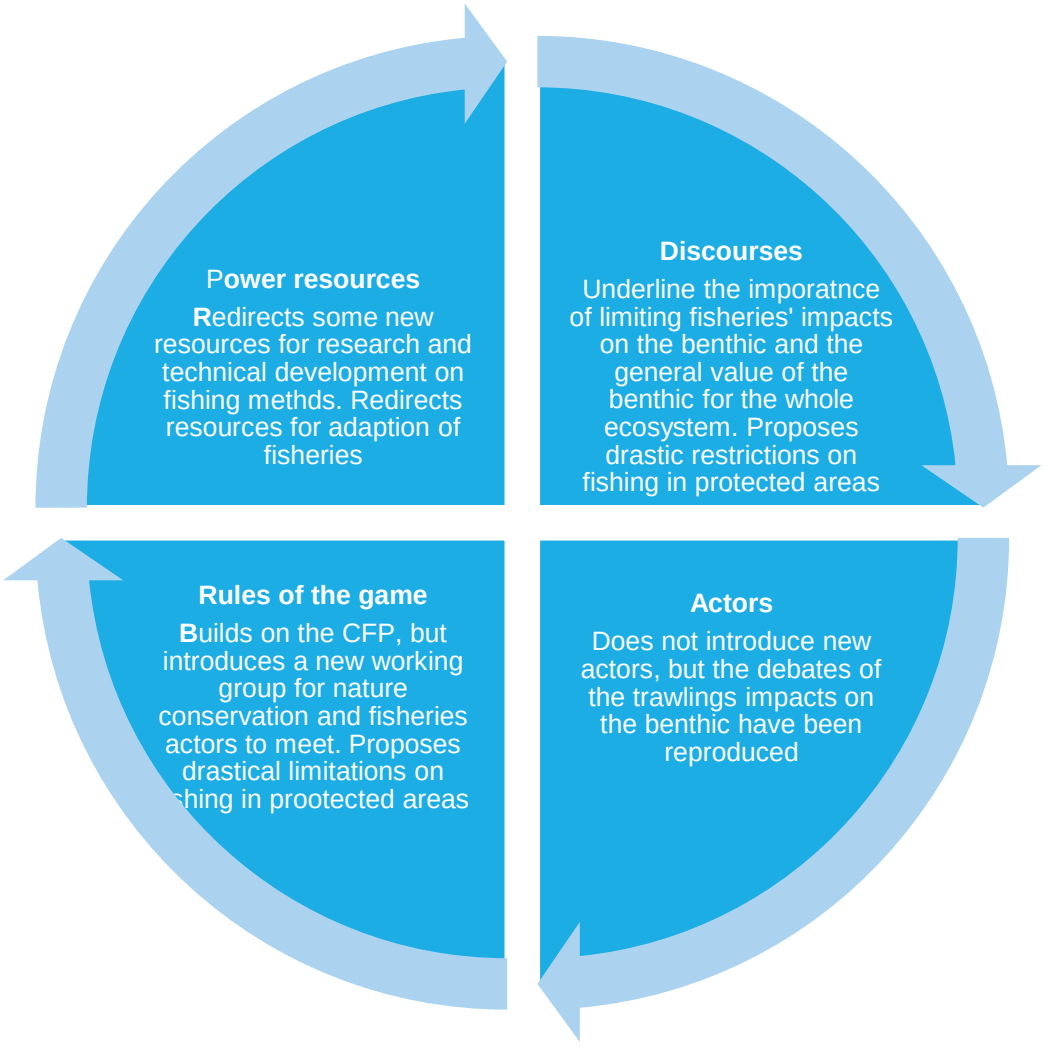

FIGURE 6 NEW DYNAMICS IN THE MLMGA FOR BOTTOM TRAWLING INITIATED BY THE MARINE ACTION PLAN

5.2.4 Drivers and challenges

These are still to some extent hypothetical, to be clarified and validated during further data collection, especially the interviews.

- A key driver is the awareness of a lack of progress in the protection of benthic habitats in the Baltic Sea and more broadly in the European seas. This is accompanied by the acknowledgment of a lack of sufficient protection measures, hence the introduction of the new initiatives. (discourse)
- Another, possibly contradictory driver is the need to ensure viable livelihoods and businesses for the fishery sector. This is exemplified in the fisheries-related EU policy documents (CFP, Marine Action Plan) and was brought out clearly in the PERMAGOV stakeholder workshop in February 2024. (discourse)
- Direction of financial resources to new fishing techniques and related research, as well as to support the fishing sector can be a positive driver (power and resources)
- Lack of clear enough guidance on the application of the seabed threshold values at national and local level decisions on dredging can hamper the use of the threshold values (resources and power).
- Political pressure may be slowing the implementation of certain high-impact processes (i.e., threshold setting) which will be significantly reduced once these processes are complete. Completion of the threshold setting process (only partially complete 16 years after MSFD adoption), will eliminate many possibilities for political conflict and transform many related processes to a purely administrative/technical exercise.
- Among the key challenges are possible implementation deficits
    - The Marine Action Plan is a soft policy measure relying on voluntary actions (rules of the game). Starting a new working group (again a soft means) to organise dialogue between nature conservation and fisheries authorities and stakeholders can help the implementation.
    - So far, none of the contracting parties to HELCOM has taken a lead role in the implementation of the BSAP's action S65. Forthcoming meetings of the HELCOM heads of delegates (June and December every year) are the most likely moments for a contracting party to take the lead. (rules of the game)

5.3 Case 4: Sustainable fisheries in Italian Marine Protected Areas (MPAs)

5.3.1 The MLMGA for Sustainable fisheries in Italian MPAs

European consumers depend on seafood as an important source of nutritious food. This is particularly so for Mediterranean countries, which in the EU are among the ones with the highest fish consumption rates. About 86% of the fishing boats in the Mediterranean region are small-scale fisheries (SSF) which serves as an important way of life of the coastal communities and considered to have lower impact on habitats, hence potentially compatible with EU's 30% protection goal[68]. However, the small-scale fishery is confronted with a number

[68] Cavallé, M., Said, A., Peri, I., Molina, M.(2020). Social and economic aspects of Mediterranean small-scale fisheries: A snapshot of three fishing communities. Published by Low Impact Fishers of Europe. https://lifeplatform.eu/wp-content/uploads/2021/03/LIFE-Social-and-Economic-Aspects-of-Mediterranean-SSF-compressed.pdf

of challenges, including reduced fish stocks, climate change, competition for ocean space with other marine users (e.g., industrial trawlers, offshore resource extraction, and potentially renewable energy), as well as marine pollution[69]. The integration of knowledge from different stakeholders along with more inclusive and innovative approaches have been suggested as stronger and more acceptable approach to managing the fisheries. Such knowledge integration and benefits could be achieved using various support mechanisms (e.g., co-management) and tools (e.g., digital platforms and models) to create greater data accessibility, coordination, and engagement[70].

This case study focuses on Italy where large marine areas, which also serve as important fishing grounds to (small-scale) fisheries are likely to be transformed into marine protected areas (MPAs). So far, about 3.4% of the Italian territorial waters (0-12 nm) has been designated as MPA, but only 1.67% of these territorial waters has an implemented management plan[71]. In addition, the double management systems of nationally designated MPAs, Natura2000 sites and other internationally designated protected areas with different levels of restrictions for marine users such as small-scale fishers may impact management practices[72]. We specifically examine the practices and challenges to and of co-management of fisheries in MPAs through the engagement with small-scale fishers, MPA managers and other stakeholders in Italy. Our case study aligns with the European Green Deal objective of preserving and restoring ecosystems and biodiversity (EU Biodiversity strategy and natural capital conservation) and Farm2Fork – a fair, healthy and environmentally friendly food system. Other relevant international and regional policies include the FAO Code of Conduct for Responsible Fisheries and Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries. It also aligns with the Habitats Directive (integral to the Natura 2000 - a European ecological conservation initiative), Marine Strategy Framework Directive (MSFD), Common Fisheries Policy (CFP), The common fisheries policy today and tomorrow: a Fisheries and Oceans Pact towards sustainable, science-based, innovative and inclusive fisheries management (especially in creating and managing MPAs and ensuring sustainable fisheries), and EU Action Plan: Protecting and Restoring Marine Ecosystems for Sustainable and Resilient Fisheries (2023) – Marine Action Plan - a decisive EU initiative to reinforce the health of marine ecosystems and underpin the sustainability of fisheries. Integrated maritime policy (IMP) - lays down the obligation to establish a maritime planning process is another relevant policy. Italian fishery and marine policies such as National and community management fishery plans (NMFPs and CMFPs), Total Allowable Catch (TAC), Territorial Use Rights for Fishing (TURFs), local management plan (LMPs) and Community-led Local Development (CLLD) plans are equally relevant for this case.

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[69] Jentoft, S., & Chuenpagdee, R. (2009). Fisheries and coastal governance as a wicked problem. Marine policy, 33(4), 553-560.

[70] Toonen, H. M., & Bush, S. R. (2020). The digital frontiers of fisheries governance: fish attraction devices, drones and satellites. Journal of environmental policy & planning, 22(1), 125-137.

[71] Gomei M., Abdulla A., Schröder C., Yadav S., Sánchez A., Rodríguez D., Abdul Malak D. (2021). Towards 2020: how Mediterranean countries are performing to protect their sea. Rev. ed., 36 pages. https://wwfeu.awsassets.panda.org/downloads/wwf_towards_2020_how_mediterranean_countries_are_performing_to_protect_their_sea.pdf

[72] Russi, Daniela. "The Torre Guaceto marine protected area–what can we learn from this success story?." Marine Protected Areas. Elsevier, 2020. 329-342.

Although the CFP recognizes the particular position and importance of small-scale fisheries, many policies at EU and national levels do not differentiate between industrial and small-scale/artisanal fisheries, which seems critical in the Mediterranean context. In Italy, participation of fishers in co-management processes is not formally recognized by state agencies, leading to trust issues and reduced incentive to engage in co-management. In a situation where large marine areas, which have traditionally served as fishing grounds for centuries, are being transformed into MPAs over the coming years, knowledge of the processes and challenges to and of co-management can facilitate outcomes that deliver both targets related to habitats/biodiversity and sustainable fisheries. In Italy, the World Wildlife Fund (WWF) has introduced co-management through the engagement with small-scale fishers and other stakeholders. The success of co-management is in part associated with how the co-management schemes are perceived by stakeholders, including small-scale fishers (SSF). Fishers' perception of co-management processes can be a useful indicator of social acceptability of a management tool such MPAs. The focal point of this case is to contribute to the end-user (WWF's) work, by examining small-scale fishers' perceptions of co-management processes, and the factors that create opportunities for or obstacles to their participation in co-management, with the purpose of contributing to WWF's efforts to implement successful co-management with fisheries in MPAs, thus paving the way for delivering on targets related to both habitats/biodiversity and sustainable fisheries.

Rules of the game

There are various international, EU-level, national and sub-national decisions and regulations established, revised, and being implemented towards sustainable fisheries in Italy. These policies target specific actors and regulate specific activities of the actors who utilize the Italian seas including fishers. Designating MPAs in which SSF can still take place is considered an important tool for ensuring both sustainable fisheries and livelihoods, and rules examined in this case address this goal.

At the Supra-national level, FAO Code of Conduct for Responsible Fisheries is relevant. The Code provides principles and standards applicable to the conservation, management, and development of all fisheries. It also covers the capture, processing and trade of fish and fishery products, fishing operations, aquaculture, fisheries research, and the integration of fisheries into coastal area management. The principles in the FAO Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (SSF Guidelines) address policies, strategies and legal frameworks concerning small-scale fisheries, but also other matters affecting lives and livelihood in fishing communities. They have a clear human rights-based approach, and they put people, rather than fish, in focus.

At the EU level, the Common Fisheries Policy (CFP) constitutes the framework for fisheries management of the European Union. Fisheries governance is largely EU-centred and the CFP is implemented across the EU's marine territories, with member states bearing the primary responsibility for implementation. The CFP is committed to managing fish stocks sustainably for socioeconomic benefits and directly supports the EU Biodiversity Strategy for 2030's targets. Key instruments of the CFP are: The *Marine Action Plan: Protecting and Restoring Marine Ecosystems for Sustainable and Resilient Fisheries* - a EU initiative to reinforce the health of marine ecosystems and underpin the sustainability of fisheries; launched in 2023, it plays a key role in promoting the protection and regeneration of marine biodiversity, and it

reflects the EU's strategic approach to achieving sustainable food systems and preserving biodiversity. *The common fisheries policy today and tomorrow: a Fisheries and Oceans Pact towards sustainable, science-based, innovative, and inclusive fisheries management* (especially in creating and managing MPAs and ensuring sustainable fisheries). Co-management is a key aspect of the revised CFP which has shifted from a top-down system towards processes with increased involvement of stakeholders and resource-users (Linke and Bruckmeier, 2015).

The Farm to Fork Strategy is at the heart of the European Green Deal, aiming to make food systems fair, healthy and environmentally friendly. It aims to accelerate transition to a sustainable food system with neutral or positive environmental impact, ensure food security, public health, making sure that everyone has access to food/fish.

EU biodiversity strategy for 2030 seeks to restore the good environmental status of marine ecosystem. The strategy contains specific commitments and actions to be delivered by 2030 including protecting a minimum of 30% of EU's Sea area by 2030. It establishes an EU-wide network of protected areas on land and at sea through the existing Natura 2000 areas, with strict protection for areas of very high biodiversity. The strategy directly deals with MPA and sustainable fishing practices. The Marine Strategy Framework Directive (MSFD) also contributes to EU Biodiversity Strategy for 2030. It sets a framework for marine environmental protection and good environmental status.

The *Integrated maritime policy (*IMP) lays down the obligation to unlock the potential of the blue economy and maritime economic activities including fishing and support the development of sustainable planning process, which takes into account land-sea interactions and promote cooperation among Member States. It addresses public consultation requirements, the use of best available data and cross-border cooperation. Member States still have the responsibility to set up and decide on the format and content of the resulting maritime spatial plans, including any allocation of maritime space to various activities and uses.

The Regional Plan of Action for Small-Scale Fisheries in the Mediterranean and the Black Sea (RPOA-SSF) is a relevant regional policy. It emphasizes the need for the involvement of stakeholders and resource users by explicitly putting fishers and their communities at the heart of its 10-year strategy for achieving a sustainable future through their active participation in decision-making including co-management[73].

In Italy national and community management fishery plans (NMFPs and CMFPs) provide various regulations such as total allowable catch (TAC), Territorial Use Rights for Fishing (TURFs), local management plan (LMPs) and Community-led Local Development (CLLD) plans for specific communities. Such decentralised approach as opposed to a single national plan, is aimed at ensuring more effective measures based on the available resource (including financial) in specific areas.

[73] Veneroni, B., & Jacobsen, R. B. (2024). The price of regionalisation: Discursive dominance and stakeholders coalitions in the Northern Adriatic Sea fishery governance arrangement. Marine Policy, 163, 106113.

Actors

Fisheries governance within the EU and specifically, Italy has become more complex and multilayered. The reform of CFP from a top-down approach to power delegation though regionalisation and more participatory decision-making has led to different actors from the international to local levels involved in fisheries governance.

At the supra-national level United Nation's Food and Agriculture Organisation (FAO), operates through the General Fisheries Commission for the Mediterranean (GFCM)- with its Sub-Regional Committee for the Adriatic Sea (SRC-AS) and the Scientific Advisory Committee on Fisheries (SAC) [74] . This shows the interconnections between the international and national/community level actors in the fisheries governance.

At the EU level, the European Parliament and the Council provides legislative support. The European Commission through its DG MARE - monitors the implementation of the marine action plan and reviews progress. The European Fisheries Control Agency (EFCA) ensures enforcement, and Scientific bodies such as the STECF and the ICES (for the North Atlantic Ocean) provide scientific data and carry out assessments; The European Environment Agency provides assessments on biodiversity. The member states are involved in the national implementation of the measures and transpose EU biodiversity-related directives into national law.

At the sub-regional level, member state groups integrate measures and are involved in regional cooperation. In the mediterranean region, the General Fisheries Commission for the Mediterranean (GFCM) plays a key role. This is a regional (Mediterranean), advisory type body whose function is to promote the development, preservation and correct management of living marine resources including fisheries in MPAs. As such discourses on effective ways of fisheries emanating from such bodies play crucial roles in how the local level fishery management approaches and tools such as MPAs and co-management are implemented.

At the national level in Italy, the Directorate General for Fisheries and Aquaculture of the Italian Ministry of Agriculture, Food and Forestry Policies (MIPAAF) plays a leading regulatory role. The overall responsibility of the Italian fishery is in the hands of MIPAAF which plays a key role in translating and implementing global fishery policies and targets national at the national and local levels. The Directorate for Fisheries of the regional administrations, with the support of services provided by decentralized offices (such as Marine Coastal Guard and MPA managers) ensures the implementation of fishery policies at the local levels.

At the local/community level, the influx of multiannual funds for decentralized fishery governance has created new regionalized set-up towards lower governance levels, while establishing new initiatives for decision-making, such as Regional Advisory Committees (RACs) and Fisheries Local Action Groups (FLAGs), which includes fishermen, fish processors and traders and cooperative alliances. These new actors are fishery governance play crucial roles in co-management of fisheries. Fisheries organizations and Environmental NGOs with interest in the fisheries governance such as WWF play key roles in shaping the efforts arising from the regulations/actions. In Italy, WWF plays a key role in MPA management and implement various co-management programmes through the engagement of key stakeholders such as small-scale fishers, MPA managers, among others.

[74] Veneroni, B., & Jacobsen, R. B. (2024).

Discourses

Discourses of Fishing in MPAs have focused on:

- Inclusive governance: Discourses of inclusiveness and participation of different stakeholders (especially local/community-based groups) and social acceptability are important discourses. Use of indigenous knowledge and co-management approaches as crucial for success of MPAs and fisheries sustainability.
- Sustainable Development: Conservation measures in N2000 sites should balance environmental and socio-economic aspects, in that way reflecting the theme "environmental issues integrated in human activities". A related discourse is the need for a full-spectrum sustainability that merges biodiversity conservation with socioeconomic implications in marine governance. In addition, preserving biodiversity through the preservation of cultural heritage has been gaining increased recognition.
- Europeanization is another important discourse: Harmonizing the legal, social, economic, and environmental conditions of the fisheries among member states (e.g., establishing a network of MPAs). This helps in building a common identity by means of unified frameworks and a common policy language.
- A key drive to achieve data harmonization and sharing among member states is digitalisation and e-governance - Network and common platform for data sharing. However, there are also concerns with data restrictions and language barriers coupled with limited knowledge of data management applications among different stakeholder groups and member states.

Power resources

Hegemonic marine/fishery governance discourses play a key role in the local level governance arrangements. This is particularly so, considering the fact that funds for most national and local fishery governance initiatives is obtained from international bodies such as the European fisheries fund (Capgemini, 2014). As such, discourses (mostly emerging from the EC and its affiliates) of overfishing, illegal, unreported and unregulated fishing, biodiversity conservation, sustainability, fishery traceability, etc. are powerful forces in national and local fishery governance and MPA management.

There are also contentions over what should be considered a reliable and acceptable source of information/knowledge for fishery governance and policy - local ecological knowledge versus science-based knowledge. Science-based knowledge usually dominate decision-making in fisheries and MPA designation and management.

Unequal power relations between different marine users: Fishermen, offshore/onshore petroleum extraction/installations, tourism, etc. Fishermen are often considered less competent/less educated and tend to have limited resources including financing research, time, etc. to contribute to MPA design and implementation.

5.3.2 How the EGD influences the dynamics within the MLMGA of Sustainable fisheries in Italian MPAs

The European Green Deal is not mentioned in the CFP (revised CFP went into force in 2014). The current EU CFP website does not mention the EGD, either. The EC communication (dd, 21-02-2023) explains the direct connection between the CFP and the EGD in its introduction: “By combining environmental, social and economic sustainability objectives”, the CFP was a precursor of the EGD 1 and its related strategies.

In turn, the European Green Deal strengthened the CFP approach, emphasizing the triple contribution of fisheries and aquaculture to the economy and employment in coastal regions, food security in the EU and the protection of the marine environment. Also, the farm to fork strategy is explicitly mentioned in the EC Communication: “the farm to fork strategy recognises the strong link between healthy people, healthy societies and a healthy planet and the need to ensure the livelihood of primary producers to successfully transition to a sustainable EU food system”. MPA as a tool in fisheries management aligns with EGD objective of preserving and restoring (marine) ecosystems and biodiversity as well as fisheries support for sustainable livelihoods.

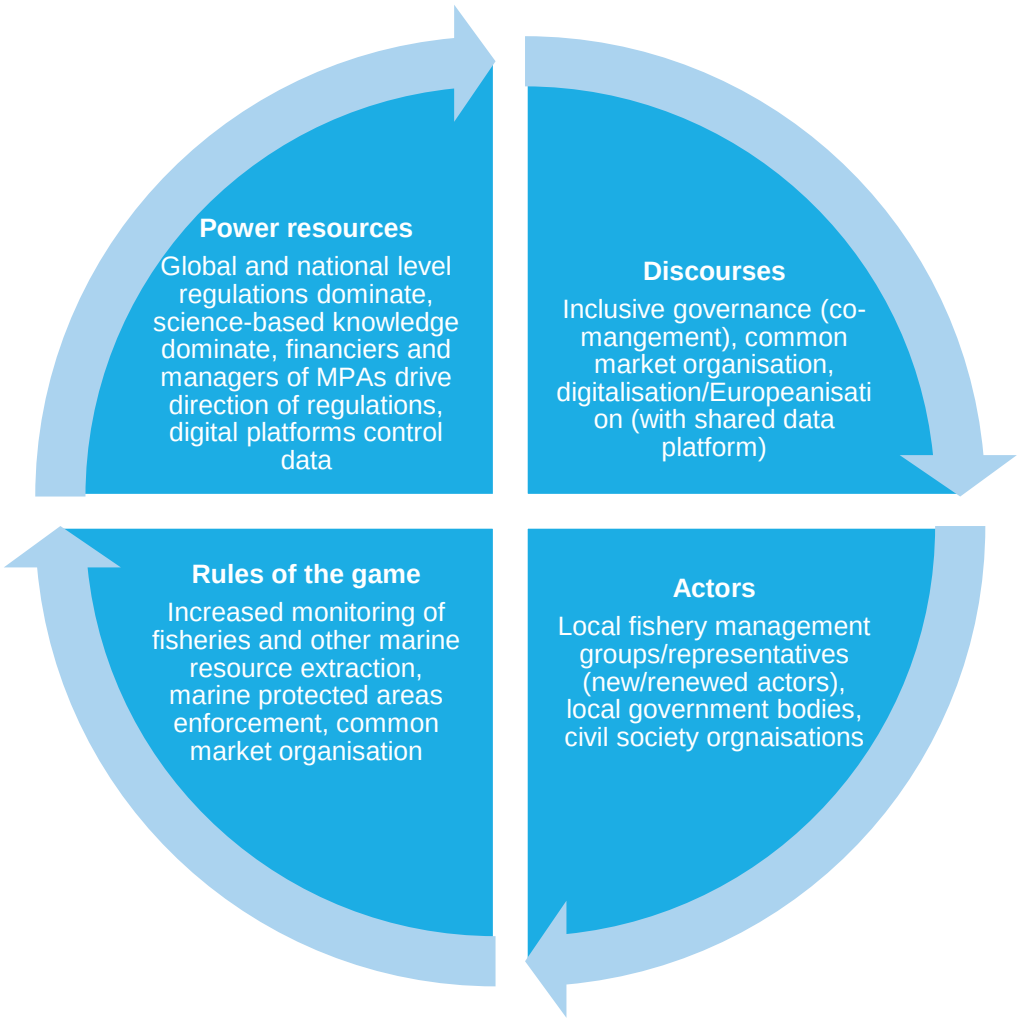

FIGURE 7 NEW DYNAMICS IN THE MLMGA FOR SUSTAINABLE FISHERIES IN ITALIAN MPAS

Whilst the CFP in its early stages had targets such as increasing fishery productivity and ensuring market stability, the EGD has brought about changes in policy targets such as the Marine Action Plan, which focuses on protecting and restoring marine ecosystems for sustainable and resilient fisheries – changing the discourse from increased productivity to achieving sustainable food systems and preserving biodiversity. And from market stability to common market organisation. As Figure 7 summarizes, the EGD objective of farm to fork strategy has influenced the shift towards climate-friendly approaches that combines both natural and social sustainability needs (e.g., creating and managing MPAs and ensuring sustainable fisheries for coastal community livelihoods – food sustainability). EGD has also enhanced the drive towards common market organisation through digitalisation and common data sharing platforms to deal with efforts such as traceability of seafood supply to consumers.

5.3.3 Drivers and challenges

There are key drivers and challenges to co-management of fisheries in MPAs that (can) affect the successful implementation of the EGD. In this section, we first highlight the drivers after which we will present the challenges.

The first driver is a framework for the integration of existing policies. That is, EGD provides a framework for integrated existing policies such as CFP, MSFD, IMP etc. that can drive coherence between the fishing and biodiversity conservation, promoting synergies in biodiversity conservation and sustainable livelihood efforts.

In addition, technological advances (digitalisation) and shared data platforms, including common market systems and traceability can enhance enforcement of national and regional level monitoring and regulations and can facilitate the achievement of the EGD's objectives.

Finally, it should not be underestimated that the feeling in significant parts of the general population of 'urgency' in moving towards more sustainable approaches to food production has increased in recent years, which fundamentally changes the context of these discussions.

In terms of challenges, merging biodiversity needs (resource conservation through MPAs) and social needs (fishers' livelihoods) often leads to tensions, sometimes dispossession of vulnerable groups and conflicts. This can impact on the EGD objective biodiversity conservation and farm2fork.

Also, Member States have different levels of marine resource enrichment and tend to have different conservation targets (and aspiration) coupled with different socio-political arrangements, hence move at different speed to implement EGD policies, and prioritise national political and strategic goals.

Another crucial challenge is in dealing with the different stakeholders/actors (i.e., government, environmental NGOs, Fishers, tourists, MPA managers, and – increasingly -other marine users) with their different interests and different level of understanding and capacity to meet various regulatory requirements. Hence, making it difficult to choose a particular path through which the related EGD can be achieved. For instance, there is always a tension between using (natural) science-based knowledge versus local ecological knowledge towards marine governance.

Ethical issues in the use of digital technologies and data sharing could impede sharing of information among states and different actors. Also, access issues and language within which such data is accessed can impact on EGD policies.

5.4 Conclusions regime complex Marine Life

With the introduction of the EGD and its elements relevant for the marine life (mainly the biodiversity strategy) we see an ecosystem-focussed, holistic narrative emerging. It strengthens the already existing ecosystem-based approach in fisheries management through the CFP and also depicts the integrity of seabed as a foundation of the marine ecosystem. More needs to be done to protect marine life and a new emphasis on MPAs as part of that.

The question is how this biodiversity discourse will shape MLMGAs, also in the future and with EGD ambitions and initiative to protect marine life. It has generated more attention for the impact of various human activities (fisheries and dredging) on biodiversity (driver). It is unclear, however, how this discourse is going to be translated into rules (and perhaps resources becoming available) (challenge).

Industry actors have dominant discourses based on their sectorial/industry perspective and this generates a tension with the biodiversity discourse as well as between industries/sectors. This tension also steams from different rules systems (GAs): around biodiversity/conservation and around regulating human activities/industry. The fisheries sector and their livelihoods is a key example of a particular sectoral discourse that is already challenging the new ecosystem-focused narrative as being too narrow when it neglects social and economic perspectives of sustainability. (challenge)

Integration/coherence between policies and governance levels is key concern (challenge), with EGD providing potentially a framework for this. However, biodiversity strategy and Farm2Fork are not fully aligned, or at least it is uncertain how biodiversity is integrated in Farm2Fork. And vice-versa, how livelihoods and food security issues are integrated in biodiversity strategy.

6 Regime complex Marine Energy

6.1 Green Deal developments around Marine Energy

Within the marine energy regime complex, there are two high level policies that set out a framework for achieving EGD objectives: The European Climate Law and the EU Strategy to Harness the Potential of Offshore Renewable Energy (ORE Strategy).

The European Climate Law transforms the EGD ambition of climate neutrality by 2050 into a legally binding target and includes an intermediary target of reducing greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. It intends to set the long-term direction for EU climate action and establishes a framework for achieving the targets. Member States are legally bound to take necessary measures to meet the targets, which are set out in National Energy and Climate Plans for 2021-2030. The Plans are currently being updated to reflect increased targets and ambitions and must be submitted to the EC by 30th June 2024.

The ORE Strategy provides a general enabling framework for making ORE a core component of Europe's energy system by 2050. It acknowledges that cross border cooperation on renewable energy projects is crucial for meeting ORE targets and highlights the importance of cross-border marine spatial planning, regional cooperation on ORE grid infrastructure, strengthened legal and regulatory frameworks, mobilization of investments, research and innovation, increased supply chain capacity, and skills development. The Strategy promotes the principle of coexistence between ORE and other uses of the sea and emphasises the importance of proper protection of vulnerable ecosystems and protected species. It draws upon existing policies including the Maritime Spatial Planning Directive and the Marine Strategy Framework Directive, both of which require Member States to work together at sea-basin level to ensure biodiversity protection.

Delivering on the ORE Strategy and the specific EGD objective of *'delivering clean, affordable and secure energy',* required the EC to make a series of regulatory changes. The Renewable Energy Directive (RED) provides the legal framework for the development of clean energy across all sectors of the EU economy and was revised in 2021 to ensure alignment with the 'Fit for 55' package. It set a binding overall Union target of 40% for renewable energy sources in the EU's energy mix by 2030. The target was increased again in 2023 to 42.5%, with the aim of achieving 45%. The Trans-European Networks for Energy (TEN-E) Regulation was also revised to support a move away from a project-by-project approach and towards an integrated energy system at a sea basin level. It introduces new rules for integrated offshore and onshore grid planning and requires Member States to conclude non-binding agreements to cooperate on goals for offshore renewables within each sea basin to be deployed by 2050, with intermediate steps in 2030 and 2040. The agreements were adopted in January 2023. It also provides for the establishment of a single point of contact in each sea basin to speed up planning and permitting processes.

The REPowerEU Plan was launched in response to the global energy market disruption caused by the war in Ukraine and sets out steps to phase out Europe's dependency on Russian energy imports. The Plan builds on the Fit for 55 package and puts forward additional actions to save energy, diversify supplies, accelerate the clean energy transition, and combine investments and reforms. Recognising the need to address complex permitting procedures for ORE projects, the REPowerEU Plan proposed amendments to the RED to allow for renewable

energy to be classed as an 'overriding public interest' and to include a requirement for Member States to adopt spatial plans that designate 'renewables acceleration areas'. Projects in these areas benefit from shorter permitting processes and simplified environmental impact assessments. The principle of 'overriding public interest' was also incorporated, which limits the grounds for legal objection[75].

The European Green Deal Industrial Plan aims to enhance the EU's ability to attract investment and maintain competitiveness in the energy transition. The Plan is based on four pillars: a simplified regulatory framework for manufacturing net zero technologies; access to funding for green investments; a skilled workforce; and resilient supply chains. It includes the Net-Zero Industry Act (NZIA), which is designed to overcome the existing fragmentation of rules within the EU internal market around permitting for net-zero technologies, together with the Critical Raw Materials Act (CRMA), which aims to strengthen the value chain of critical raw materials used by the wind industry and therefore reduce dependencies on third countries, especially China[76].

6.2 Case 5 Floating Wind in the Celtic Sea

6.2.1 The MLMGA for floating wind in the Celtic Sea

While most of Europe's offshore wind is currently bottom-fixed, it is widely agreed that moving forwards, floating wind will make a substantial contribution to achieving EU and UK targets. Floating turbines can be deployed in deeper sea basins, therefore opening up new areas for offshore wind development. Several countries across Europe have announced floating wind targets for 2030 and are developing policies in support of these targets.

In 2019, the UK delivered the Offshore Wind Sector Deal (OWSD), which seeks to maximise the advantages for UK industry from the expansion of offshore wind. It sets out plans to raise the productivity and competitiveness of UK companies by providing forward visibility for Contracts for Difference rounds, increasing UK content, driving research and innovation on new wind technologies, and increasing supply chain competitiveness. One of the key work-streams under the OWSD is the Pathways to Growth (P2G), which brings together government representatives, Statutory Nature Conservation Bodies (SNCBs), and industry to identify and address the key environmental and consenting challenges that pose a barrier to the UK meeting its 2030 offshore wind targets.

The EC launched the EU Wind Power Package in 2023, which includes the European Wind Power Action Plan and a Communication on *'Delivering on the EU's offshore energy ambitions'.* The Action Plan focuses on six key areas: increased predictability and faster permitting; improved auction design; access to finance; a fair and competitive international environment; skills development; and industry and Member State engagement. Actions in these areas are intended to address barriers and challenges to rapid deployment of offshore wind and create a transparent pipeline of projects to attract investment. The Communication

[75] European Council (2023, December 19). REPowerEU: Council agrees on accelerated permitting rules for renewables. Retrieved April 19, 2024, from REPowerEU: Council agrees on accelerated permitting rules for renewables - Consilium (europa.eu)

[76] Ivanov, I. (2023). The Green Deal Industrial Plan for the Net-Zero Age–challenges for the Bulgarian Industry. In SHS Web of Conferences (Vol. 176, p. 02009). EDP Sciences.

follows up on the ORE Strategy and addresses issues specifically related to offshore wind including marine spatial planning, offshore grids, and port capacity. Support for the Wind Power Package was enshrined in a European Wind Charter, which was signed by 26 EU Member States in December 2023. It includes a range of voluntary commitments aimed at aligning and coordinating efforts across the European wind industry. It is estimated that the EU needs to deploy over 30GW of wind per year to reach a 45% renewable energy target by 2030[77], and hence, coordination amongst Member States is crucial for meeting ORE targets.

The Celtic Sea is now established as one of the world's largest floating wind pipelines[78]. Since the Celtic Sea falls under the jurisdiction of two EU Member States (Ireland and France), as well as a non-EU Member State (UK), the influence of EGD policies on floating wind development varies according to national priorities. Furthermore, floating wind cuts across multiple policy domains including renewable energy, security, trade, climate, planning, and environment, in which there is a division of competences between the EU and Member States. In view of this complex policy and governance arena, the case will be approached as a nested case study, focusing on governance arrangements related to ORE, marine spatial planning, and consenting and licensing processes. It will include an analysis of transboundary and post-Brexit governance arrangements across the broader Celtic Sea basin covering the four jurisdictions of England, Wales, Ireland, and France. It will also focus on governance arrangements relevant to two specific sites in the Celtic Sea within Irish and English/Welsh jurisdictions, where floating wind projects are in development. However, floating wind is a new technology and there is limited understanding of the long-term impacts on marine ecosystems[79] and the potential for co-existence with other uses of the sea, including fishing[80]. Hence, there are tensions between offshore wind ambitions, biodiversity goals, and the socio-economic wellbeing of coastal communities, which will be explored in this case study.

Rules of the game

Renewable energy policies: In Ireland, renewable energy policies that support implementation of the EGD are incorporated into legislative frameworks on climate action. The Climate Action and Low Carbon Development (Amendment) Act 2021 provides a legally binding governance framework for achieving a 51% reduction in emissions by 2030 and net-zero by 2050. The Climate Action Plan 2021 commits Ireland to sourcing up to 80% of electricity from renewables by 2030 and sets a target of at least 5GW of installed offshore wind by 2030 and a further 2GW of floating wind in development. The 2030 target is being implemented under Phase Two of Ireland's Offshore Wind Plan. Phase Three covers the period from 2030 to 2050 where offshore wind targets increase to 20GW by 2040 and at least 37GW by 2050. Similarly, the UK's climate legislation provides a framework for guiding

[77] WindEurope (2023). Wind energy in Europe: 2022 Statistics and the outlook for 2023-2027. Retrieved April 19, 2024, from Wind energy in Europe: 2022 Statistics and the outlook for 2023-2027 | WindEurope
[78] Celtic Sea Power (2024). Missing middle: Building Cornwall's floating offshore wind industry. Retrieved April 19, 2024, from Missing Middle "Building Cornwall's Floating Offshore Wind Industry" - Celtic Sea Power
[79] Farr, H., Ruttenberg, B., Walter, R. K., Wang, Y. H., & White, C. (2021). Potential environmental effects of deepwater floating offshore wind energy facilities. Ocean & Coastal Management, 207, 105611.
[80] UK Fishing and Offshore Wind (2021). All Party Parliamentary Group on Fishing. Policy Brief No. 11. Retrieved April 24, 2024, from Policy Brief: UK Fishing and Offshore Wind (squarespace.com)

offshore wind ambitions. The Climate Change Act 2008 committed the UK to reduce emissions by at least 80% by 2050 and was amended in 2019 to net zero emissions by 2050. Offshore wind is a key component of the UK's Net Zero Strategy 2021, which sets targets of 40GW of offshore wind by 2030, and 1GW of floating wind to be in progress by 2030. The Energy Security Strategy 2022 increased these targets to 50GW of offshore wind capacity by 2030, with up to 5GW to come from floating wind. The Energy Act 2023 provides a legal framework for implementation of both Strategies.

Marine Spatial Planning: The EU Maritime Spatial Planning (MSP) Directive 2014 is part of the overarching Integrated Maritime Policy of the EU. Member States were required to submit a national marine spatial plan to the EC by March 2021, including the placement of all offshore wind areas. The EU MSP Directive was transposed into Ireland's national legislation in 2016 and new legislative, regulatory, and policy frameworks have been established including a Marine Planning Policy Statement, a National Marine Planning Framework (NMPF) and a Maritime Area Planning Act 2021 (MAP Act). The NMPF and MAP Act provide the legislative and overall decision-making framework for marine planning in Ireland, including the location of offshore wind projects and offshore transmission system infrastructure. The MAP Act established a new sub-national planning process for specified areas and activities including offshore wind, referred to as Designated Maritime Area Plans (DMAPs). The adoption of DMAPs marked a major policy change, moving from a developer project-led approach to a state plan-led approach. The draft Offshore Renewable Energy Development Plan II (OREDP II) was published in 2023 and is a national spatial strategy to support the transition to this new policy approach and deliver on 30GW of floating wind beyond 2030.

In the UK, the Marine and Coastal Access Act 2009 introduced a new marine planning regime that moved away from a sector-by sector approach and provided for the preparation of marine plans for the UK marine area. The UK Marine Policy Statement 2011 provides the framework for preparing marine plans and taking decisions affecting the marine environment. Marine planning is devolved to the four UK Administrations, with each Administration adopting a different approach. In England, marine planning occurs at a regional level. There are 11 marine plan areas covering all inshore and offshore waters. Of relevance to this case study are the South-West Inshore and South-West Offshore Marine Plans. In contrast, a single Welsh National Marine Plan covers the inshore and offshore regions of Wales. The Environment Act (Wales) 2016 and the Wellbeing of Future Generations (Wales) Act 2015 are key pieces of legislation in Welsh marine planning processes.

Consenting and licensing: In Ireland, the MAP Act created a new State consent, the Maritime Area Consent (MAC). Approval of a MAC application is dependent on consistency with the NMPF and is a pre-requisite for an application to An Bord Pleanála for development consent under the Planning and Development Act 2000. The consenting process requires the completion of environmental impact assessments, which are guided by the EU Marine Strategy Framework Directive (MSFD) 2008 and its requirement for Member States to achieve and maintain Good Environmental Status (GES), together with the EU Birds and Habitats Directives, which guide the protection and management of vulnerable species and habitats (known as the Natura 2000 network). Ireland is currently developing specific legislation to enable the identification, designation, and management of Marine Protected Areas (MPAs) in line with obligations under the EU MSFD. In December 2022, the Government approved the General Scheme of the Marine Protected Areas Bill, which is intended to work in parallel with the MAP Act.

In England and Wales, the seabed is owned and managed by The Crown Estate from whom offshore wind developers are required to secure a seabed lease as a pre-requisite for securing a Development Consent Order (DCO) from the Secretary of State. The environmental component of the consenting process is primarily guided by the UK Marine Strategy 2012 (amended 2019) and the Habitats Regulations (EU Birds and Habitats Directives as transposed into UK domestic law). Following departure from the EU, sites formally protected as part of the Natura 2000 network have been integrated into a UK wide national network of protected sites. Marine Conservation Zones (MCZs) are designated under the Marine and Coastal Access Act 2009 and contribute to the national network of sites and complement the Natura 2000 network. The UK Environment Act 2021 sets out the new legislative framework for environmental protection following departure from the EU. The Act sets new legally binding targets for the environment, one of which is a target for improving the condition of MPAs by 2042.

The UK's Energy Act 2023 delivers the Offshore Wind Environmental Improvement Package (OWEIP), which aims to address the environmental impacts of offshore wind infrastructure and speed up the consenting process. It provides new powers to streamline the Habitats Regulations Assessment and MCZ Assessment, which are part of the requirements for obtaining a DCO. In addition, the new National Policy Statement for Renewable Energy Infrastructure (2024) states that offshore renewable energy projects are to be considered as Critical National Priority (CNP) Infrastructure. This designation is intended to streamline planning and consenting processes by applying a policy presumption that public benefits from CNP infrastructure will outweigh any loss or harm to a nationally protected site that cannot be addressed through the mitigation hierarchy (a tool that guides developers throughout a project's life cycle to address potential harm to biodiversity, based on the sequential steps of avoidance, minimisation, mitigation, and offsetting).

Actors

European Commission: The EC is a leading energy policy actor. It has used its role as an initiator of policy proposals to promote ambitious and legally binding climate targets that rely on the rapid acceleration of renewable energy projects. The current energy crisis has required higher levels of coordination and resource mobilization across the EU, which has legitimised a greater role for the EC in the energy affairs of Member States[81].

OSPAR Commission: The OSPAR Commission is the body that governs and implements The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention), which is the legislative instrument by which 15 Governments and the EU cooperate to protect the marine environment of the North-East Atlantic. The Celtic Sea is included as Region III under the Convention. The OSPAR Commission also supports implementation of the EU Marine Strategy Framework Directive. Recognising that offshore wind infrastructure, including subsea cables, is likely to impact biodiversity, the OSPAR Commission has established a group on Offshore Renewable Energy Developments, which is preparing guidance aimed at minimising cumulative environmental impacts from offshore wind development.

[81] Osička, J., & Černoch, F. (2022). European energy politics after Ukraine: The road ahead. Energy Research & Social Science, 91, 102757.

National state actors: Due to the cross-cutting nature of floating wind development, there are multiple state actors involved in setting policies and regulatory frameworks including those that hold portfolios for Energy, Climate, Environment, Fisheries, Infrastructure Planning, Transport, Defence, Finance, Business and Trade, and Regional Development. Domestic energy policy is developed by the Department for Energy Security and Net Zero (DESNZ) in England, and the Department of the Environment, Climate and Communications (DECC) in Ireland. Since the Russian invasion of Ukraine, these departments have produced several policies that incorporate targets for floating wind e.g. British Energy Security Strategy and Ireland's Offshore Energy Programme. Marine Spatial Planning (MSP) is intended as a mechanism for integrating decision-making across multiple policy domains, and hence, state actors have the responsibility for developing marine plans. In Ireland, DECC is the relevant actor, and in England, it is the Department for Environment, Food, and Rural Affairs (DEFRA). However, DEFRA has delegated this responsibility to the Marine Management Organisation (MMO), which is a non-departmental public body with development management functions.

Planning authorities: In Ireland, offshore wind farms are considered a Strategic Infrastructure Development (SID), and development permission is a function of An Bord Pleanála, a national independent statutory body. Regional Assemblies are prescribed bodies under the Planning and Development Act 2000, and therefore have a statutory role in decision making on SID alongside An Bord Pleanála. Similarly, in the UK, offshore wind projects are considered Nationally Significant Infrastructure Projects (NSIPs). Planning applications are examined by the Planning Inspectorate, who makes recommendations to the relevant Secretary of State for a final decision to grant or deny a DCO. Local authorities are key actors in floating wind development due to their role in determining planning decisions about onshore electrical infrastructure that are required to export electricity from floating wind farms to the national distribution network.

State bodies and agencies: State bodies and agencies are involved in consenting processes for floating wind. In Ireland, the Maritime Area Regulatory Authority (MARA) is responsible for granting a Maritime Area Consent (MAC) to offshore wind developers. In England, the MMO is responsible for issuing marine licenses as part of the consenting process, while Natural Resources Wales (NRW) is the responsible body in Wales. For projects in the Celtic Sea that straddle English and Welsh boundaries, developers are required to undertake two different processes to secure licences from both MMO and NRW.

Electricity System Operators (ESOs): The ESO in England and Wales is National Grid, while EirGrid is the ESO in Ireland. ESOs are responsible for developing, managing, and operating the electricity grid. They also assess applications for grid connections from offshore wind developers and offer grid connection contracts.

The Crown Estate: The Crown Estate is the owner and manager of the UK seabed. It supports the implementation of government energy policy by leasing areas of seabed for renewable energy projects and has statutory obligations under the Habitats Regulations, including a requirement to assess the impacts of proposed projects on protected sites before a seabed lease can be awarded. The Crown Estate is currently working towards Leasing Round 5 (due early 2024), which seeks to establish a new floating wind sector in the Celtic Sea. The Leasing Round focuses on three Project Development Areas (PDAs) that aim to deliver a total capacity of 4.5GW by 2035.

Offshore wind industry (includes manufacturers, suppliers, and project developers): Industry actors are involved in the development, manufacturing, construction, and operation of offshore wind farms. They are dependent on a supportive policy and regulatory environment and engage in lobbying to influence policy decisions on issues such as grid infrastructure, regulatory reforms, and long-term financial investments. Their interests are represented by several industry alliances and associations. Of relevance to this case study are Wind Energy Ireland and the Celtic Sea Developers Alliance. The latter is hosted by Marine Energy Wales and facilitates networking and collaboration between actors in Ireland, Wales, and Cornwall. These alliances draw upon shared knowledge, expertise, and experience to ensure that industry concerns are raised in a strategic and coordinated manner. There are multiple forums for interaction between industry alliances and state actors including working groups, meetings, and round tables. In the UK, the All-Party Parliamentary Group (APPG) for the Celtic Sea has been used as a forum for the wind industry to engage with decision-makers.

Port owners and operators: Ports are central to the development of offshore wind, playing a key role in supply chain logistics, turbine assembly, transportation, operations and maintenance. In the UK, ports are either under private ownership, municipal control, or run by a trust. They are self-financing and free from Government subsidy or support. In Ireland, the responsibility for ports falls under the remit of several departments and local authorities. Tier 1 and 2 ports of national significance are under the remit of the Department of Transport, while Tier 3 ports of regional significance are under the remit of local authorities.

Cornwall and Isles of Scilly Local Enterprise Partnership (CIOS-LEP): The CIOS-LEP is a non-statutory, private-public sector partnership hosted by Cornwall Council that is tasked with setting and driving the local economic strategy and boosting regional economic growth. Securing the social and economic benefits of floating wind in the Celtic Sea is a key strategic project for CIOS-LEP[82]. As part of their strategic work, CIOS-LEP commissioned an analysis of the policy planning and action that is needed to address the gap between national policy for floating wind and policy interventions to support regional industrial development i.e. ports, grid, companies, and workforce[83]. In partnership with the Welsh Government, the CIOS-LEP leads the Celtic Sea Cluster (CSC), which brings together government actors, regulators, and project developers to accelerate floating wind in the Celtic Sea. Working in partnership with the Welsh Government ensures alignment between Welsh Government sector plans for South Wales and the CIOS-LEP plan for South-West England. The CSC engages with the Offshore Wind Industry Council, local and national governments, and The Crown Estate.

Environmental organisations: Environmental organisations including the RSPB**,** The Wildlife Trusts**,** The Marine Conservation Society, Greenpeace**,** and Friends of the Earth are supportive of renewable energy developments, but act as a united voice advocating for more strategic and robust planning systems to ensure that offshore wind ambitions avoid substantial adverse effects on the marine environment. In a joint statement issued in 2022, a coalition of UK based environmental actors declared that an outdated, disconnected approach to marine development is contributing to the poor state of UK seas and causing increasing pressures on

[82] CIOS-LEP (2023). Flow Vision 2030. Retrieved April 19, 2024, from https://cioslep.com/wp-content/uploads/2023/05/3.-FLOW-Vision-2030-May-23-Print-version.pdf

[83] Celtic Sea Power (2024). Missing middle: Building Cornwall's floating offshore wind industry. Retrieved April 19, 2024, from, Missing Middle "Building Cornwall's Floating Offshore Wind Industry" - Celtic Sea Power

vulnerable species and habitats[84]. The statement called for country-level marine plans for offshore renewables that incorporate ecological considerations and other marine users, as well as impact assessments that identify cumulative impacts of multiple offshore developments. In Ireland, Fair Seas is a coalition of leading environmental organisations and networks who are expressing major concerns about the Irish Government's position that co-location of offshore wind and Marine Protected Areas (MPAs) is a practical way forward for managing competing interests.

Fishing industry: The overlap between fishing grounds and offshore wind infrastructure positions the fishing industry as key actors in floating wind development. In the UK, the fishing industry is represented by the National Federation of Fishermen's Organisations, while the Irish Fish Producers Organisation is a national body in Ireland. Both organisations have called for closer engagement between the fisheries sector and offshore wind developers. The MMO has established Regional Fisheries Groups (RFG) in England to provide a forum for local fishers to participate in decision-making about issues affecting fisheries. Similarly, NRW has established non-statutory Local Fishery Groups for communicating about fisheries management and issues affecting the industry including offshore wind development. In Ireland, the National Inshore Fisheries Forum is supported by a network of Regional Inshore Fisheries Forums, which provide a platform for fishers to raise and discuss concerns. Concerns have been raised that the installation of wind turbines causes loss of species and habitats and that the areas targeted for wind farms in Irish waters are the main spawning and harvesting areas[85].

Scientific community: Since floating wind is a new technology, there has been significant investment in Research and Development. In the UK, partnerships between government, industry, and academia have made significant progress in moving floating wind technology towards commercial status. A Floating Offshore Wind Centre of Excellence has been established to accelerate the build-out of floating wind farms and drive innovations in manufacturing, installation, operations and maintenance, while also minimising environmental impact. In 2023, the UKRI launched a five year, £7,000,000 research programme to further understanding of the impacts of large-scale expansion of floating offshore wind infrastructure on marine ecosystems. In Ireland, EU funding has been used to support research into the market uptake of floating wind technology.

Civil society: Civil society plays a key role in the governance of offshore wind, and evidence suggests that civil society engagement in climate action has influenced policy within the EU[86]. Activist movements such as 'Fridays for Future' have raised public understanding of climate issues and ensured that climate protection is on the political agenda[87]. Climate Action Network Europe is the leading NGO coalition on climate change action and has over 185 member organisations active in 38 European countries. It has recently submitted a detailed response

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[84] Royal Society for the Protection of Birds (2022). Retrieved April 19, 2024, from, phs-summary-brief_rspb_august-2022_final_publiclink.pdf (offshore-coalition.eu)

[85] Michael, N. (2023, January 9). Ireland's fishing crisis: Trawler operators fear they will lose out to offshore windfarms. Irish Examiner. Retrieved April 19, 2024, from https://www.irishexaminer.com/news/spotlight/arid-41042792.html

[86] Botrel, C. A., Rekker, S., Wade, B., & Wilson, S. (2024). Understanding the lobbying actions taken by the Australian renewable energy industry. Journal of Cleaner Production, 434, 139674.

[87] Siebler, C., Schmidt, L., Schürmann, L. and Saldivia Gonzatti, D. (2023, September 3). Five years of 'Fridays for Future': what future now? Social Europe. Retrieved April 24, 2024, from Five years of 'Fridays for Future': what future now? (socialeurope.eu)

to the EU consultation on the development of guidance on renewables acceleration areas under the revised RED[88].

Discourses

A discursive shift towards energy security: Over the past two decades, political discourse on the energy transition has been commonly framed around an environmental argument, underpinned by commitments to international climate targets and national ambitions to achieve net-zero[89]. However, the war in Ukraine has led to a discursive shift away from commitments to climate goals and towards energy security and independence[90]. Political discourse on the energy transition is now firmly rooted in geopolitical rationalities[91] and focuses on the importance of building resilience within domestic energy supplies to avoid exposure to volatile global energy prices and a perceived threat to energy supplies.

New technologies such as floating wind will drive economic recovery from the COVID-19 pandemic - the win-win discourse: State actors frame the renewable energy transition as a pathway for driving economic recovery from the impacts of the COVID-19 pandemic and make claims about numerous opportunities for training, upskilling, and employment ('green jobs') that will be generated by the adoption of emerging technologies such as floating wind. The 'green jobs' discourse has replaced the 'environment versus jobs' debate that has plagued so many green policies in the past[92]. Cost reduction narratives are deployed to increase social acceptance of renewable energy technologies and align renewable energy ambitions with the current economic concerns of the electorate. Thus, the socio-economic discourse frames the energy transition as a 'win-win opportunity'[93].

Floating wind can co-exist with multiple uses of the sea: Significant scale up in the deployment of offshore wind has created a discourse on 'spatial squeeze'. This discourse is commonly deployed by the fisheries sector who anticipate displacement from fishing grounds due to the expansion of offshore wind infrastructure[94]. State actors counter this discourse by mobilising the concepts of 'co-existence' and 'co-location'. The EU ORE Strategy uses this kind of legitimising discourse to alleviate concerns about the impact of offshore wind development on the designation of protected areas: "*offshore wind will require less than 3% of the European maritime space and can therefore be compatible with the goals of the EU*

[88] Climate Action Network Europe. (2023, February). Renewable Energy Planning and Mapping for Successful Acceleration with Nature and Communities at Its Heart: Guiding Principles for Member States. Retrieved April 23, 2024, from CAN-Europe-contribution_RAAs-guidance_23022024.pdf (caneurope.org)

[89] Bryant, S. T., Straker, K., & Wrigley, C. (2019). The discourses of power–governmental approaches to business models in the renewable energy transition. Energy policy, 130, 41-59.

[90] Kuzemko, C., Blondeel, M., Dupont, C., & Brisbois, M. C. (2022). Russia's war on Ukraine, European energy policy responses & implications for sustainable transformations. Energy Research & Social Science, 93, 102842.

[91] Wiertz, T., Kuhn, L., & Mattissek, A. (2023). A turn to geopolitics: Shifts in the German energy transition discourse in light of Russia's war against Ukraine. Energy Research & Social Science, 98, 103036.

[92] Bainton, N., Kemp, D., Lèbre, E., Owen, J. R., & Marston, G. (2021). The energy-extractives nexus and the just transition. Sustainable Development, 29(4), 624-634.

[93] Schwab, J., & Diaz, N. C. C. (2023). The discursive blinkers of climate change: Energy transition as a wicked problem. The Extractive Industries and Society, 15, 101319.

[94] National Federation of Fishermen's Organisations (2022). Retrieved April 19, 2024, from https://www.nffo.org.uk/accelerated-offshore-wind-increases-the-spatial-squeeze-of-fishing/

Biodiversity Strategy". Marine spatial planning (MSP) is framed as the solution for managing competing demands on ocean space and is intended to reassure stakeholders that state actors are working strategically. However, a report by the European Court of Auditors[95] concluded that while MSP facilitates the allocation of sea space to different uses, it does not resolve conflicts between users. A recent study of the impacts of offshore wind on European fisheries[96] concluded that there is likely to be a significant increase of conflict potential in the Celtic Sea after 2025 and that real world examples of co-existence are scarce. Therefore, the co-existence and win-win discourses conceal the realities for people living alongside and/or using areas allocated for floating wind development.

Power resources

European institutions (European Commission, Parliament, and Council) are powerful actors in marine energy. They have used their relational power to frame the Russian invasion of Ukraine as a threat to energy security, which has turned the energy transition into a geopolitical problem rather than a climate mitigation tool. The rapid acceleration of renewable energy projects has been presented as a desirable solution to this geopolitical problem, and the EU has used its agent power to mobilise resources towards a solution. New policy and regulatory frameworks aimed at driving investment and accelerating the deployment of offshore wind projects have been produced, and hence, energy policy innovation is an outcome of this relational power. However, Articles 192 (environment) and 194 (energy) of the Treaty on the Functioning of the European Union (TFEU) both include a sovereignty exception[97], which means that there are limits to the reach of EU policy innovations. Consequently, Member States can move towards an energy transition at their own speed, based on national political and strategic priorities[98]. In an EU context, Ireland is widely regarded as a laggard in terms of its implementation of environmental and climate policies[99], and its support for offshore wind energy[100].

Power relations between state actors and the offshore wind industry are interdependent. State actors are dependent on well-resourced and innovative industry actors to generate a pipeline of floating wind projects that deliver on renewable energy targets. In turn, industry actors are dependent on a supportive investment and regulatory environment to progress floating wind projects. These interdependencies played out in the UK Contracts for Difference (CfD) auction

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[95] European Court of Auditors, Offshore renewable energy in the EU – Ambitious plans for growth but sustainability remains a challenge. Special report 22, 2023, Publications Office of the European Union, 2023. Retrieved April 19, 2024 from, https://data.europa.eu/doi/10.2865/85796

[96] Stelzenmüller, V. et al., (2020). Research for PECH Committee – Impact of the use of offshore wind and other marine renewables on European fisheries. European Parliament, Policy Department for Structural and Cohesion Policies, Brussels.

[97] Fehling, M. (2021). Energy transition in the European Union and its member states: Interpreting federal competence allocation in the light of the Paris Agreement. Transnational Environmental Law, 10(2), 339-363.

[98] Pérez, M. D. L. E. M., Scholten, D., & Stegen, K. S. (2019). The multi-speed energy transition in Europe: Opportunities and challenges for EU energy security. Energy Strategy Reviews, 26, 100415.

[99] Torney, D., & O'Gorman, R. (2019). A laggard in good times and bad? The limited impact of EU membership on Ireland's climate change and environmental policy. Irish Political Studies, 34(4), 575-594.

[100] Roux, J. P., Fitch-Roy, O., Devine-Wright, P., & Ellis, G. (2022). "We could have been leaders": The rise and fall of offshore wind energy on the political agenda in Ireland. Energy Research & Social Science, 92, 102762.

round held in May 2023. In the build-up to the auction, industry actors raised repeated concerns that the Government had set the strike price too low, which would prevent bids from offshore wind developers due to soaring inflation costs[101]. However, the Government ignored industry concerns and retained the published strike price. As a result, bids from offshore wind developers were effectively excluded from the auction round. The lack of offshore wind bidders led to a swift about turn by the UK Government. The strike price has already been raised by 66% ahead of the next auction round due in March 2024[102]. A separate funding pot has been specifically allocated for offshore wind in an attempt to secure multiple projects in support of the 2030 target.

Environmental organisations have used their power to exert pressure on UK and Irish Governments so that environmental considerations are integrated into decision-making on offshore wind development. The RSPB and The Wildlife Trusts are members of the UK's Offshore Wind Evidence and Change Programme (OWEC), which is a coalition of government organisations, industry bodies, and environmental NGOs. Through this forum they have played a major role in the development of the Offshore Wind Environmental Improvement Package (OWEIP), which introduces the legal mechanism to deliver strategic compensatory measures in cases where adverse environmental effects on protected habitats or species (under the Habitats Regulations) cannot be avoided, minimized, or mitigated. It provides for the establishment of a Marine Recovery Fund, which enables developers to deliver their compensatory measures through payment into the fund.

6.2.2 How the EGD influences the dynamics within the MLMGA of floating wind in the Celtic Sea

The EGD has generated a new discourse (see Figure 8) around global leadership and industrial competitiveness in the 'race to zero'. Global leadership and industrial competitiveness are key themes in many of the emerging EGD policies including the Green Deal Industrial Plan, REPowerEU Plan, and the Wind Power Package. State actors view global leadership on offshore wind as crucial for attracting investment and securing business from emerging markets. Demonstrating industrial competitiveness, particularly in relation to China, is a major priority due to China's increasing market share of offshore wind capacity[103] and the recent entry of Chinese wind turbine manufacturers into European projects[104]. The global leadership and industrial competitiveness discourse suggests that there will be winners and losers in the energy transition[105]. Therefore, the use of this discourse in the European

[101] Ambrose, G. (2023, September 8). What went wrong at UK government's offshore wind auction? The Guardian. Retrieved April 22, 2024, from What went wrong at UK government's offshore wind auction? | Wind power | The Guardian

[102] Martins, L. (2023, November 16). Government boosts offshore wind's CfD strike price by 66%. The Guardian. Retrieved April 22, 2024, from Government boosts offshore wind's CfD strike price by 66% - Current News (current-news.co.uk)

[103] Goldthau, A., Hughes, L., & Nahm, J. (2022). The Political Logic of Reshoring in Low Carbon Technologies: Economic Interdependence and Green Industrial Policy. Available at SSRN 4066047.

[104] WindEurope (2023, October 24). Wind Power Package: game-changer for Europe's energy security. Retrieved April 22, 2024, from https://windeurope.org/newsroom/press-releases/wind-power-package-game-changer-for-europes-energy-security/

[105] Sattich, T., & Huang, S. (2023). Industrial competition-who is winning the renewable energy race? In Handbook on the Geopolitics of the Energy Transition (pp. 158-182). Edward Elgar Publishing.

Green Deal policies legitimizes a more active role for the EU's rules of the game, particularly those rules that support a move towards an integrated energy system, a key objective of the EGD[106].

Development of an integrated energy system across Europe requires cooperation at the sea basin level, which introduces non-EU actors into the governance arrangement (see Figure 8). In 2022, the UK signed an MoU on 'Offshore Renewable Energy Cooperation' with the North Seas Energy Cooperation (NSEC). In 2023, the UK and Ireland signed an MoU on 'Energy transition, offshore renewables, and electricity interconnection cooperation'. There is a shared discourse amongst UK state actors (DESNZ) and NSEC participants (Belgium, Denmark, France, Germany, Ireland, Luxembourg, Netherlands, Norway, Sweden, and EC) that these partnerships are a win–win for meeting shared net zero commitments and bolstering European energy security. The EC also recognises their contribution to achieving EGD objectives. The rules of the game for these post-Brexit arrangements are set out in the MoU's Terms of Reference for Working Groups and Committees, national policies on energy, offshore infrastructure, marine spatial planning, and biodiversity protection, together with obligations as EU Member States and rules set out in the EU-UK Trade and Cooperation Agreement (energy section valid until 2026).

The REPowerEU Plan has created new rules of the game (see Figure 8) by calling on Member States to swiftly map suitable areas for renewable energy and making provision for the fast-tracking of permitting processes for renewable energy infrastructure. The new rules, together with binding targets set out in the RED and the emphasis on co-existence between marine uses as set out in the ORE Strategy, have resulted in the emergence of a new policy framework in Ireland that will guide the future development of floating wind in the Celtic Sea. Ireland has accelerated the implementation of a new marine planning system based on the development of sub-national marine plans (DMAPs). This policy response marks a move away from a developer project-led approach to a state plan-led approach for managing multiple uses of the sea, including offshore renewable energy. The introduction of this new policy has generated concerns amongst other users of the sea, most notably the fisheries sector, which faces further access restrictions as new MPA legislation moves forward. However, these competing pressures have also created opportunities for the fishing industry to become new actors in the governance of offshore wind.

New actors (see Figure 8) are also being introduced into the UK governance arrangement for floating wind in the Celtic Sea. The Cornwall and Isles of Scilly Local Enterprise Partnership (CIOS-LEP) recognises that floating wind development in the Celtic Sea has the potential to deliver major socio-economic benefits to an area with high levels of social deprivation. They are taking decisive and strategic actions to ensure that benefits from floating wind are captured regionally, with a specific focus on ensuring that electricity generated by the first floating wind projects comes ashore in Cornwall[107]. The CIOS-LEP is mobilising new types of knowledge and expertise from its coalition of actors and using regional funds (Shared Prosperity Funds and European Regional Development Funds) to finance its floating wind agenda. The use of

[106] European Commission (2020, July 8). EU Energy System Integration Strategy. Retrieved April 22, 2024, from EU_Energy_System_Integration_Strategy.pdf. (europa.eu)
[107] CIOS-LEP (2023). Flow Vision 2030. Retrieved April 22, 2024, from https://cioslep.com/wp-content/uploads/2023/05/3.-FLOW-Vision-2030-May-23-Print-version.pdf

regional funds provides actors with rules and resources that they can draw upon to make decisions and progress floating wind against a background of centralised governance structures and decision-making powers. In parallel, Cornwall Council secured a Devolution Deal in November 2023, which provides for the establishment of the Cornwall Floating Wind Commission. The Commission is currently in a design phase and thus, constructing its role in floating wind governance. It is anticipated that it will have sufficient convening powers to engage directly with state actors. Hence, new actors are creating new rules of the game from the bottom up.

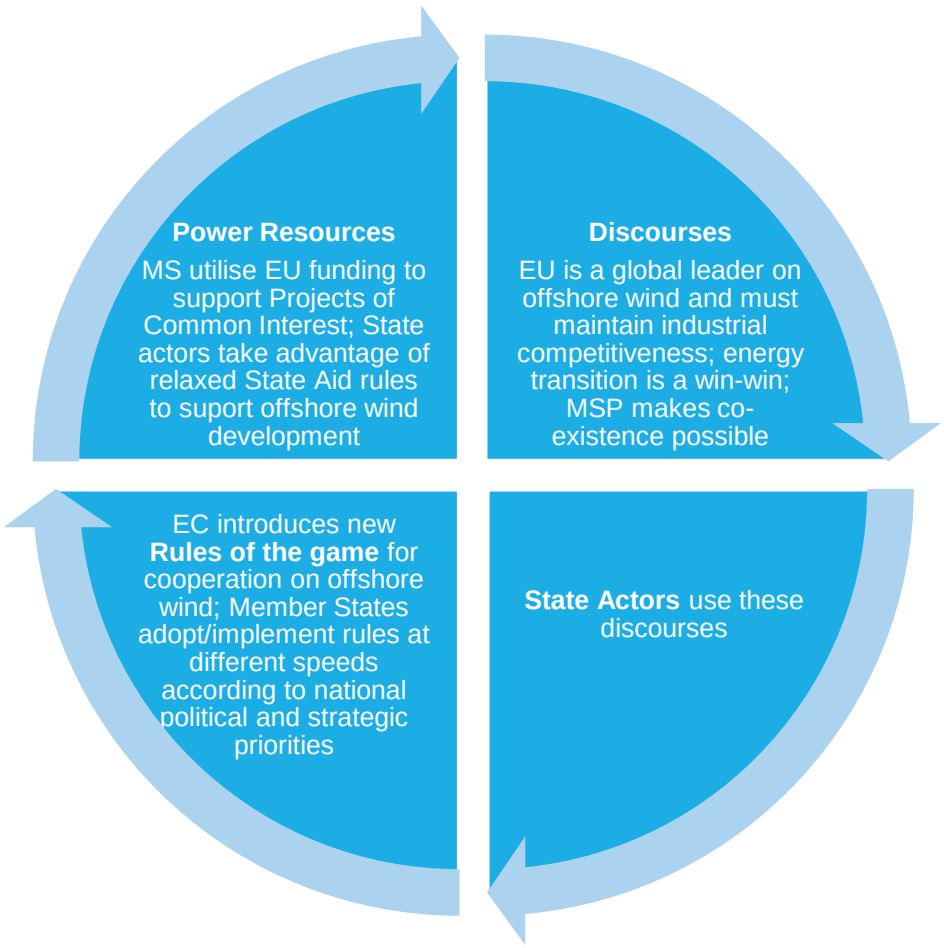

FIGURE 8 NEW DYNAMICS IN THE MLMGA FOR FLOATING WIND N THE CELTIC SEA

6.2.3 Drivers and challenges

Drivers

- New resources are available for Projects of Common Interest (via Connecting Europe Funding facility) to support the development of a European integrated energy system, which is a key objective of the EGD. Within the Celtic Sea, France and Ireland are collaborating on shared infrastructure (the Celtic Interconnector).
- As part of the Green Deal Industrial Plan, the EC has relaxed State Aid rules for renewables, thereby creating new rules of the game for Member States to subsidise offshore wind. The availability of new resources provides an opportunity for Ireland and France to accelerate deployment of floating wind in the Celtic Sea

Challenges

- EU-wide targets for offshore wind require national-level implementation. However, Member States decide on their own energy mix and move at different speeds to implement EU policies, depending on national political and strategic priorities. Therefore, progress is hampered by the time taken for Member States to include EGD policies in national legislation and processes. Ireland is widely regarded as a laggard in terms of its progress on offshore wind, which is reflected in its targets for deploying floating wind (delayed until post 2030)
- Following the introduction of new rules to speed up permitting processes outlined in the EU Wind Power Package, industry groups now regard Europe's onshore and offshore electricity grids as the biggest threat to the accelerated expansion of wind. There is a mismatch between ambitious floating wind targets and the grid capacity needed to manage an increasing amount of electricity coming onto the grid.
- The long wait time for grid connections is considered a major barrier to investment in renewable energy, with queues of up to 15 years in the UK.
- Fast and flexible planning systems are urgently needed to help ports prepare for the expansion of floating wind[108]. However, willingness to invest in port upgrades is dependent on an established pipeline of projects, which in turn depends on a supportive policy environment to attract developers[109]. Within the south-west region of the UK, a lack of port infrastructure is seen as a critical challenge facing the development of floating wind in the Celtic Sea.

6.3 Case 6 Energy Islands in Denmark

This case study investigates and analyses the complexities in implementation of large-scale, complex offshore wind energy projects in the North and Baltic seas. The energy islands in Denmark are one of the 'starting points', and a very anticipated step in decarbonization efforts to meet European Green Deal goals. Denmark has planned for two islands, one in the North

[108] RenewableUK (2023). Industry Roadmap 2040: Building UK Port Infrastructure to Unlock the Floating Wind Opportunity. Retrieved April 22, 2024, from Industry Roadmap 2040: Building UK Port Infrastructure to Unlock the Floating Wind Opportunity

[109] Mnyanda, L. and Millard, R. (2023, October 22). Lack of port infrastructure threatens Scotland's offshore wind boom. Financial Times. Retrieved April 22, 2024, from https://www.ft.com/content/aff4d90e-91a8-43cb-987b-e237a87b08e5

Sea, and one in the Baltic. For the North Sea Island, the ambition is to utilize the advantageous ocean spaces here and turn it into a shared power hub between North Sea Neighbouring countries, which is an inherently complex process. For the Baltic, the hub is placed on the southern end of the Danish Island Bornholm, which has heavy impact on a local level. The plan has, and will continue to, impact several institutional levels, and contains a multitude of different types of actors and stakeholders, each depending on the specific case area. Finding the synergies between these and applying a governance framework, the aim is to address the uncertainties in these islands' development, and to advice better governance of implementation to meet green deal goals.

6.3.1 The MLMGA for Energy Islands in Denmark

The EGD has several underlying policies regarding green transition efforts that the Energy Islands could contribute to, including: "Further decarbonizing the energy system is critical to reach climate objectives in 2030 and 2050", "The clean energy transition should involve and benefit consumers", and "The transition to climate neutrality also requires smart infrastructure".

Finally, "A sustainable 'blue economy' will have to play a central role"[110], directly targets utilizing the oceans as a space for rapid green transition efforts. In the EU strategy for utilizing ocean space for rapid transition efforts, there is a heavy focus on utilization of the North Sea and Energy Islands development. The focus is generating a network of islands in the future, and an international energy grid, they can be connected to. In the EU strategy for harnessing offshore wind power, the EU are calling Energy Islands and their meshed grids 'hybrid projects' [111]. The point of building Energy Islands is accelerating EGD integration between countries' networks, and optimal usage of renewables through the Hub and Spoke Concept.

In the Energy Islands case, the several policies are identified as relevant for the development and political decision of their implementation. Highlighted are the *RePowerEU plan*[112], *The Ostend Declaration*[113], and the "*Addendum to the Danish Climate plan about energy and industry of June 22nd, about Ownership and construction of Energy Islands etc.*" (translated from Danish) released in 2021.[114].

The RePowerEU plan was generated as a need for rapidly diminishing reliance on gas, oil and fossil fuel imports from Russia. The plan accelerates the Green Energy transition, focusing on

[110] EU Commission. (2019). The European Green Deal. Brussels: EU. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52019DC0640.

[111] EU Commission (2020) An EU Strategy to harness the potential of offshore renewable energy for a climate neutral future. Brussels: European Commission. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52020DC0741 (Accessed: 26 February 2024).

[112] European Commission. (2022). REPowerEU Plan Communications. Brussels: European Commission. https://eur-lex.europa.eu/resource.html?uri=cellar:fc930f14-d7ae-11ec-a95f-01aa75ed71a1.0001.02/DOC_1&format=PDF.

[113] Straeten, Tinne van, Lars Aagaard, Agnès Pannier-Runacher, Robert Habeck, Eamon Ryan, ClaudTurmes, Rob Jetten, Terje Aasland, and Grant Shapps. (2023). Ostend Declaration of Energy Ministers on the North Seas as Europe's Green Power Plant Delivering Cross-Border Projects and Anchoring the Renewable Offshore Industry in Europe. Ostend: EU. https://kefm.dk/Media/638179241345565422/Declaration%20ENERGY_FINAL_21042023.pdf.

[114] Danish Government. (2021). Tillæg Til Klimaaftale Om Energi Og Industri Af 22. Juni 2020 Vedr. Ejerskab Og Konstruktion Af Energiøer Mv. Danish Government. https://kefm.dk/Media/5/E/Aftaletekst%20-%20Energi%C3%B8er%20-%20Ejerskab%20og%20konstruktion%20af%20energi%C3%B8er%20mv.pdf

accelerating offshore wind implementations. It encourages Member states to follow principles of energy savings, accelerating green energy implementation and diversifying energy sources. Member state governments are responsible for following these directions and implementing a governance structure to accommodate them.

To meet the goals of the RePowerEU plan, the Esbjerg Declaration was created. The Esbjerg cooperation generated this declaration to decide on the future of renewable Energy in Denmark and introduces a plan for transforming the North Sea into a Green power Plant of Europe with international collaboration [115]. The Cooperation members currently consists of actors from Belgium, Denmark, Germany, the Netherlands, forming the Esbjerg Group. In 2023, this Declaration was joined from by energy ministers from Luxembourg, Norway, Sweden, Ireland and France. Together with the Esbjerg group, the generate the Ostend declaration[116]. This document set the targets for an international cooperation of generating Energy hubs across the North Sea through an international energy grid.

Lastly, the "*Addendum to the Danish climate deal on energy and industry about ownership and construction of energy islands etc*." specifically targets the multilevel distribution of ownership of the Energy Islands in Denmark[117]. The North Sea Energy Island will be half state owned, and half owned by private stakeholders, that can apply to tenders to be the ones allowed to construct the island. This is a point still highly relevant for Energy Islands today, seeing as implementation effort are as of June 2023 paused to investigate a cheaper solution for construction[118]. The tendering process has as a result also been paused.

The Addendum targets cooperation on an international level as well. They're a steppingstone to realize EU goals of 30GW offshore wind by 2030 and labelled as a 'society task'. The Addendum aims for construction of Energy Islands North Sea and Bornholm for 5GW 'as fast as possible', international connections structured simultaneously.

The EGD acts as an overarching structure and influencing following relevant policies. These three policies have a heavy impact on the Energy Islands in Denmark case. Dual in nature, Case 6 splits the found governance arrangements between the two specific case areas, North Sea and Baltic Sea.

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[115] The Esbjerg Cooperation (2023) Transforming the North sea into Europe's green power plant. Available at: esbjergcooperation_expertpaper.pdf (energinet.dk) (Accessed: 23 April 2024).

[116] Straeten, Tinne van, Lars Aagaard, Agnès Pannier-Runacher, Robert Habeck, Eamon Ryan, Claude Turmes, Rob Jetten, Terje Aasland, and Grant Shapps. (2023). Ostend Declaration of Energy Ministers on the North Seas as Europe's Green Power Plant Delivering Cross-Border Projects and Anchoring the Renewable Offshore Industry in Europe. Ostend: EU. https://kefm.dk/Media/638179241345565422/Declaration%20ENERGY_FINAL_21042023.pdf

[117] Danish Government. (2021). Tillæg Til Klimaaftale Om Energi Og Industri Af 22. Juni 2020 Vedr. Ejerskab Og Konstruktion Af Energiøer Mv. Danish Government. https://kefm.dk/Media/5/E/Aftaletekst%20-%20Energi%C3%B8er%20-%20Ejerskab%20og%20konstruktion%20af%20energi%C3%B8er%20mv.pdf

[118] Edlefsen, Hanne Storm, and Thomas Laursen. (2023). 'Energinet Skal Undersøge, Om Energiø Nordsøen Kan Opføres På Platforme'. 30 June 2023. https://energinet.dk/anlaeg-og-projekter/energioer/nyheder-om-energioer/energio-nordsoen-platforme/

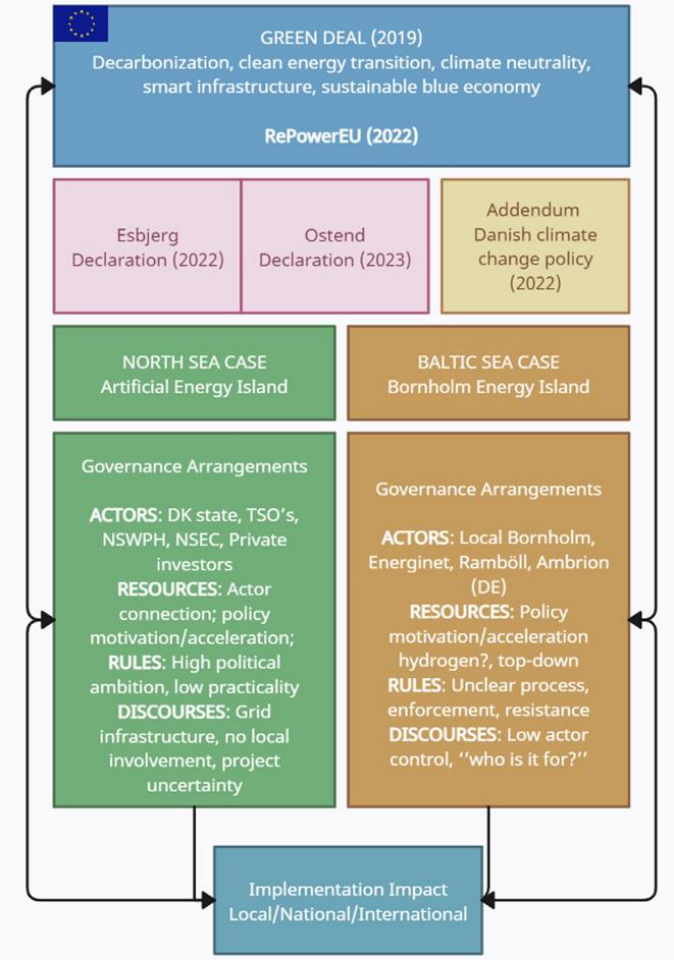

FIGURE 9 EUROPEAN GREEN DEAL GOALS THAT HAVE ACCELERATED EFFORTS IN THE MLMGAS FOR THE ENERGY TRANSITION IN DENMARK

Figure 9 describes the relation and pathways from European Green Deal goals that have accelerated efforts in green transition. The EGD acts as an overarching structure and influencing following relevant policies. These three policies have a heavy impact on the Energy Islands in Denmark case. Dual in nature, case six splits the found governance arrangements between the two specific case areas, North and Baltic. Their core contents, while both influenced by the same above policies, are affected differently. Thus, their GA's and how they work differs as well, as does the way they impact on different levels.

Impact, not easily measured at this stage as both North and Baltic Energy Island projects are in their preliminary stages, can then again be related back to European Green Deal and Policies. This is to understand how the EGD has impacted both the planning, construction and eventual operation of the Danish Energy Islands.

Rules of the game

North Sea Energy Island (Offshore, Thorsminde): Early process development and a year-long planning process, that has mainly deferred to a high political ambition, has not been in line with what is practically feasible to do. International agreements, alongside EU regulations calling for rapid action, have put pressure on project development and, as a result, the EI project risks becoming rushed. Traditional offshore wind planning will have to shift to

accommodate implementation of the North Sea Island, as it is implemented with a novel, international concept.

Baltic Sea Island (On-shore, Bornholm): Actions to improve local acceptance are required. Management of the project has been primarily top-down, also halting an open-door-policy project that was developed by a local population group on Bornholm. State planning has not been in line with local wants and needs.

Actors

Overarching structure between actors: EU Commission á Danish State à Danish Energy Agency à Energinet (TSO) á Industry and local stakeholders.

North Sea Island actors:

- NSWPH consortium (generating Hub-and-Spoke concept)
- North Sea Energy Consortium (NSEC, facilitates development of North Sea Grid and renewable potential in the region)
- Copenhagen Infrastructures Partners (CIP, tendering for North Sea Island, VindØ and BrintØ)
- Ørsted (Danish wind energy developer, tendering for North Sea Island)
- ELIA (Belgium TSO), Gasunie (German TSO), TenneT (Netherlands TSO).

Stakeholders relevant for the North Sea Island are involved through a hierarchical top-down structure. A heavy focus is on actor inclusion, solidified with the Addendum, and tendering processes on-going highlighting shared ownership of the Island, means that actors with practical know-how should be able to fully inform policymakers for best course of action for a successful project. However, halts in project progression questioning feasibility of the Energy Island Project development suggests communications between stakeholders and policymakers have not been sufficient.

Baltic Energy Island actors:

- Energinet (Danish TSO, handling approved business case[119])
- Local population of Bornholm
- Ramböll (Environmental impact assessment of Bornholm Energy Island)
- Ambrion (German TSO connecting to Bornholm Island), Vattenfall (Swedish TSO connecting to Bornholm Island).

The Baltic Energy Island rushed project has increased opposition. To meet climate goals, Danish Government takes 'shortcuts' for faster implementation, circumventing extensive process as complaints and regulations etc. E.g., Danish government shutdown of open-door policy, due to not meeting EU regulations for offshore wind expansion[120], means local

[119] Energinet. (2022). 'ENERGIØ BORNHOLMS ELINFRASTRUKTUR BUSINESS CASE FOR'. https://energinet.dk/om-publikationer/publikationer/business-case-for-energioe-bornholms-elinfrastruktur/

[120] Klima-, Energi- og Forsyningsministeriet (2023, December 19). Åben dør-ordning lukkes. https://kefm.dk/aktuelt/nyheder/2023/dec/aaben-doer-ordning-lukkes

populations are less able to do their own offshore wind projects. Local stakeholders are less capable of giving input to the project, thus strengthening local opposition.

Discourses

North Sea Island: Project is delayed and is now "stuck". Politically motivated pause to enhance planning process, localize planning to specific unit. Motivations are clear, but 'how to' is not. A need to clarify plans, both for tendering process that enables construction and to solidify a plan so that construction can begin. A complex network of actors makes disseminating tasks difficult. Potential competition for construction resources because of low supply might enhance expenses. Size of finished Island (platform or reclaimed land) might conflict with fisheries and environmental considerations. The Russian invasion of Ukraine shifts discourse from climate protection to energy security; implementing *fast* triumphs implementing *efficiently.*

Baltic Sea Island: Local ambition and project halted in favour of EI plans. There is a need to strengthen local inclusion. Hydrogen production goal not applicable or needed on Bornholm; relies on export.

Power resources

North Sea Island:

- EU
- Danish State
- Energinet
- Private/Public actors/investors (not identified)

There is a 'Trickle down' effect present in management of the project. North Sea Neighbouring countries à Decision making on EI construction and grid connections, are seemingly on equal footing. A consensus regarding Energy Island development between countries has been signed. Actors on 'lower' institutional levels are not. Functionality in praxis remains to be seen.

Baltic Sea Island:

- Danish State (DOE)
- Energinet (TSO, DK)
- Local population.

The Baltic Sea Energy Island planning is leaning toward top-down management. Lack of actor control means local opposition towards the project.

6.3.2 How the EGD influences the dynamics within the MLMGA of Energy Islands in Denmark

Addendum comes from a policy that establishes construction across North Sea as a path forward towards Green Transition goals. Governance arrangements and dynamics have already begun to shift (see Figure 10) to accommodate changes needed for this goal by utilizing Energy Islands as a main contender in the green transition, but further changes are needed to realize the political ideals. There is a mismatch between political motivations and

praxis. E.g., procurement deals have been laid out for particularly the Bornholm case, but not for the North Sea case, as it is still awaiting a finished plan. Without this plan, procurement cannot be started, and the 49,9% of public/private actors cannot be informed and identified.

Relating to the EGD goals and the call for a rapid transition shown all related policies, the timing is an issue. Delays in plans and decision making means a continuous delay for implementation, and the complexities. EGD does not take in consideration the political / acceptance situation in member states, concerning key infrastructure. So, when political plans are made primarily as a response to this, there may be an oversight of practicalities. In turn, the GA's affected by the policies feels this lack, and the project itself suffers from it.

The energy islands have been proved functional in theory, and EGD has become a motivator behind its implementation. Though constructing offshore wind is time consuming, and international agreements to do it even more so. The question remains how feasible it is to reach the highly ambitious goals by 2030. Changing policies and how quick a decision can be made is necessary change.

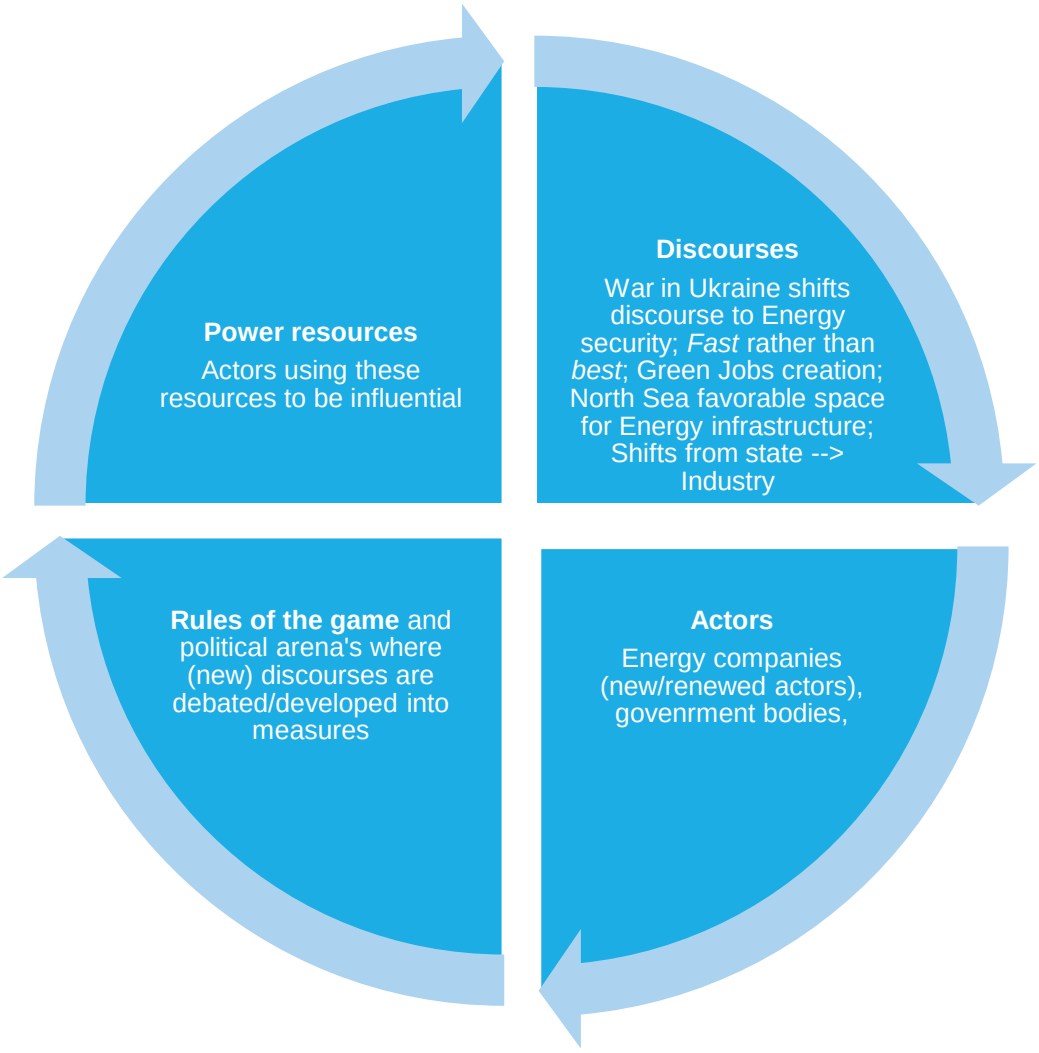

FIGURE 10 NEW DYNAMICS IN THE MLMGA FOR ENERGY ISLANDS IN DENMARK

GD policies have accelerated the need for renewable energy sources and are increasingly going offshore. Having been present and under development for years, with the RePowerEU plan and EU regulations enabling expansion in the North Sea, discourses appear when trying to implement Renewable energy systems quickly. Rushing plans generates a knowledge vacuum, where policies and ambitions do not match feasibilities in praxis. This affects the actors involved, so that the process is not clear and defined; procurement is halted until a better plan is set in motion. Not being rushed might have mitigated the acknowledgement that the North Sea EI would be too expensive. Not it's uncertain when it will be implemented.
In the Baltic Sea Case, the challenge is gaining approval from local stakeholders. Politically, Bornholm is eager to become a part of the Energy Islands, and there is a belief it will attract attention to the Island, generating jobs, etc. Locally, however, the Energy Island project has been opposed. Local stakeholders do not see a benefit for Bornholm Island in implementing the project.

6.3.3 Drivers and challenges

North Sea:

Primary drivers for the North Sea Case stems from EGD Objectives, and government decisions for planning, that allows for high ambitions in Renewable Energy Construction. A high focus of offshore implementation, presumed a key in green energy transition efforts, means governments put resources towards this goal. However, fast implementation and high political ambition contradicts feasibility in praxis, and a complex project leaves industry partners uncertain, and with less incentive to engage. In short, ambitious targets do not match what can be done in praxis.

Another driver is the international collaboration for meshed energy grids, that should enable offshore wind expansion across the North Sea to generate the 'Green Power Plant of Europe'. Fast implementation circumvents potential governance hindrances, as offshore Renewable Energy has become a high priority. The challenge here is that it takes several years for countries to construct international cabling. Most of this time stems from long policy processes, that are needed before countries can agree on how to approach the task. As an internationally meshed grid has not been created before, presumably this task will take longer. This does not line up with the time frame to reach EGD goals by 2030.

Furthermore, the ambition of Energy Islands in Denmark is policymaker and industry collaboration. In theory, this should ensure important knowledge from a multitude of different actors. A successful projects rests on gaining expert knowledge from several institutional levels. However, operating with many different actors increases complexity, and project progression is at this stage uncertain. Involved actors remain on standby with no clarity, and thus less incentive to engage.

Baltic Sea:

Denmark has much experience with construction of offshore windmills and connecting to an inland point. By 2024, the tendering process for construction of cables, windmills and inland transformer stations has begun[121]. However, construction inland has a heavy local impact, and local stakeholder inclusion complicates processes. Energy Island windmill farms could

[121] Offshore Center Bornholm (2023) Tidslinje - udbud, opgaver og anlægsprojekter for Energiø Bornholm. Available at: https://roadmappingbornholm2030.com/en/timeline/ (Accessed: 23 April 2024).

presumably take precedence over local projects. This is apparent in e.g., the shutdown of the open-door policy.

Rapid transition in accordance with Green Deal goals and contributing to meeting targets for decarbonization is a good image for Bornholm to achieve. However, local populations see no value in generating a vast amount of Energy (electricity and, at length, hydrogen) that surpasses the need of the Island, only to transport it away. Construction only for export is seen as excessive.

6.4 Case 7 Offshore Wind in Norway

6.4.1 The MLMGA for offshore wind energy development in Norway

Prior to the European Green Deal, the EU's Renewable Energy Directive (initially implemented in 2009 and revised 2018 and 2023) laid out a framework and targets to promote energy from renewable sources across various sectors. Under the EGD, the European Climate Target Plan increased targets for CO2 emission cuts by at least 55% by 2030, aiming to reach climate neutrality by 2050. The Fit for '55 Package presented an overall EU strategy that lays out actions to reach 55% reduction of emissions by 2030, and included a revision of several regulations and directives, including the Renewable Energy Directive.

Since the presentation of the EGD, both Norway and the EU have experienced an increased focus on the acceleration of renewable energy deployment, and Russia's 2022 invasion into Ukraine saw the emergence of a discourse shift toward energy security going hand in hand with increasingly ambitious targets, leading to the REpowerEU policy with its focus on acceleration of renewable energy deployment. In the same year, the Norwegian government presented its objective to allocate licenses for 30GW offshore wind energy production by 2040.

However, both in Norway and the EU there are unclarities and inefficiencies in the regulatory frameworks for offshore renewable energy development, and recent focus has been on clarifying the legal frameworks, simplifying procedures, and financing the green transition. In line with these objectives, the EC presented its Green Deal Industrial Plan and EU Wind Power Action Plan in 2023, which focus on the simplification of licensing procedures to speed up the transition. The Green Deal Industrial Plan also includes the proposal of a Net-Zero Industry Act, which simplify the regulatory environment, and aims at advancing investments in the production capacity of products that are crucial in meeting the EU's climate neutrality goals.

The case study aims to analyse and understand barriers and pathways for offshore wind development in Norway. Here, two main categories of offshore wind projects can be distinguished: electrification projects (of offshore oil and gas installations) and "standalone" offshore wind projects with the objective to generate green energy to be brought ashore. The former are primarily regulated through the Petroleum Act as they are treated as modifications to existing plans for development[122], while the latter are regulated through the Offshore Energy Act. In this case study, we focus on the governance arrangement for "regular" areas. Although Norway is not an EU member state, substantial parts of the legislative proposals on the EGD fall within the scope of the Agreement on the European Economic Area (EEA).

[122] Herrera Anchustegui, I., & Tscherning, R. (2024). Offshore oil and gas infrastructure electrification and offshore wind: a legal exploration. The Journal of World Energy Law & Business, 17(1), 35-53.

Offshore wind energy development is a prioritized sector in the current Norwegian government's strategy and in 2022 the government increased its targets to allocate licences for 30 GW offshore wind energy production by 2040. Key policies are Energy for Work[123] focusing on long-term value creation of Norwegian energy resources; Norway's climate action plan[124], which is a plan to reduce emissions in the period 2021-2030 in line with Norway and the EU's climate targets. Other supporting national policies are Norway's integrated management plans[125] and the Norwegian governments ocean strategy Blue Opportunities[126].

Currently, there is only one electrification project in operation, namely the floating wind project Hywind Tampen. The first regular fields for offshore wind were opened in 2020 through a governmental process following the Offshore Energy Act (see Figure 11): Southern North Sea II and Utsira North. Southern North Sea II will be an area suitable for bottom fixed turbines and has come farthest in the licensing process. Its auction was finalized in March 2024 and won by Ventyr, which is owned by Parkwind and the Ingka group. Utsira North, on the other hand, is suitable for floating wind turbines. The licensing process for Utsira North (a competition based on qualitative criteria) has been delayed several times and was recently postponed until presumably early 2025, awaiting approval from ESA.

FIGURE 11 THE FIRST TWO REGULAR FIELDS (IN BLUE) THAT ARE OPENED FOLLOWING THE OFFSHORE ENERGY ACT. UTSIRA NORTH BEING CLOSEST TO THE COAST, AND SOUTHERN NORTH SEA II IS THE FILED BORDERING THE SOUTHERN BOUNDARY OF THE NORWEGIAN EEZ

[123] Ministry of Petroleum and Energy (2021). White Paper Nr. 36 (2020-2021) Energi til arbeid – langsiktig verdiskaping fra norske energiressurser. Oslo, Norway.
[124] Ministry of Climate and Environment (2021). White Paper Nr. 13 (2020-2021) Norway's Climate Action Plan for 2021-2030. Oslo, Norway
[125] Ministry of Climate and Environment (2020). White Paper Nr. 20 (2019-2020). Norway's integrated ocean management plans — Barents Sea–Lofoten area; the Norwegian Sea; and the North Sea and Skagerrak. Oslo, Norway
[126] Ministry of Trade, Industry and Fisheries (2019). Blue Opportunities: The Norwegian Government's updated ocean strategy. Oslo, Norway

Rules of the game

This section gives a brief overview of the rules of the game of offshore wind governance in Norway. In terms of legal frameworks, the Offshore Energy Act entered into force in 2010, with amendments (Offshore Energy Regulations describing the licensing process in detail) in 2021. The Energy Act entered into force in 1990 and relates to the generation, conversion, transmission, trading, distribution and use of energy. It does not apply to Norwegian territorial waters; however, it is of relevance as projects bringing energy from offshore to land need to comply with both the Offshore Energy Act and the Energy Act. Complementing these are the Climate Change Act, implemented in 2018, which aims to advance Norway's climate objectives in transitioning to a low-emission society by 2050, and other pertinent legislation such as the Nature Diversity Act.

Licensing for offshore wind in Norway needs to comply with EEA rules, which are monitored through the EFTA Surveillance Authority (ESA) which is a central institution in that it monitors compliance with EEA rules. Of relevance is EU competition policy that Norway needs to adhere to.

Furthermore, specific guidelines addressing sustainability and coexistence within offshore wind fields are collaboratively developed through fora, wherein industry associations play an integral role. These guidelines translate into tailored (pre-)qualification criteria pertinent to the field, ensuring alignment with sustainability objectives and fostering coexistence within the offshore wind sector. These collectively designed rules of the game are a novel addition to the governance arrangement (two working groups were established in 2022, partly because of sustainability conflicts in early planning phases[127].

Actors

The Norwegian state is in the driving seat making decisions on the opening of areas and the granting of licenses and decision around grid connectivity. Among the public actors, the Ministry of Energy is the main authority around the identification and selection of areas for offshore wind and the development of the licensing procedures. It also oversees the implementation of Norwegian energy policy and its alignment with EU regulations wherever relevant. The Norwegian Directorate of Water Resources and Energy (NVE) is a Directorate under the Ministry of Energy and oversees the management of Norway’s water and energy resources. One of its tasks is to assess license applications. The Ministry of Climate and Environment oversees the implementation of Norwegian climate policy and its alignment with EU climate and biodiversity policies.

At the European level, ESA is a central institution in that it monitors compliance with EEA rules. Of particular relevance is Norway’s compliance with EU competition policy.

Within the private sector, offshore wind companies and consortia are driven to develop offshore wind fields, while petroleum companies are significant players seeking to electrify their offshore operations through offshore wind initiatives. Additionally, environmental agencies, non-governmental organizations (eNGOs), and fisheries associations contribute as consultation parties within the governance framework. Industry associations representing

[127] Knol-Kauffman, M., Nielsen, K. N., Sander, G., & Arbo, P. (2023). Sustainability conflicts in the blue economy: planning for offshore aquaculture and offshore wind energy development in Norway. Maritime Studies, 22(4), 47.

fisheries and energy sectors play a crucial role in collaborative forums, shaping governance mechanisms such as coexistence measures through their active participation.

Discourses

- **Climate neutrality:** With a background in the Paris Agreement, both the EU and Norway are striving to reach climate neutrality. In Norway's Climate Change Act (entered into force in 2018), it is stipulated that by 2030, greenhouse gas emissions have to be cut by at least 55%, and that by 2050 Norway must be a net-zero emission society. From 1 January 2030, Norway must ensure that remaining Norwegian greenhouse gas emissions are offset by equivalent emission reductions in other countries (Climate Action Plan).
- **Electrification** is a key discourse in Norway. As one of the leading countries with respect to renewable energy production, it also has a large offshore oil and gas industry that stands for 25 % of domestic CO2 emissions. A large share of the domestic emission cuts are hence expected to take place offshore through wind power.
- **Industry transition:** apart from the energy transition, there is a strong focus in Norway on the industry transition and the need to create new industries, jobs and competence. The White Paper Energy For Work prioritizes offshore wind and hydrogen as the new green **growth industries**. The discourse is strongly connected to the eventual phasing out of the oil and gas industry.
- Since 2022, there is a strong focus on **acceleration** of wind power deployment through a focus on increasing targets and the introduction of fast-track procedures and a simplification of the regulatory processes. This is strongly related to the increasing focus on energy security and acceleration has been inscribed in the EU's REPowerEU Plan. Simplification of the regulatory environment is a central part of the Green Deal Industrial Plan.

Power resources

The centralized authorities take the final decisions in terms of the opening of areas and the design and allocation of licenses.

The offshore wind industry is strongly dependent to access to financing and thus state support is crucial to develop the fields that have been opened. For the Southern North Sea II field, the Norwegian state has received approval from ESA to use mutual Contracts for Difference (CfD) up to 23 billion NOK and with a fifteen-year limit, which will be awarded through an auction (the auction was finalized in March 2024). A Contract for Difference (CfD) is a financial agreement between the industry and the government and establishes a fixed price for the electricity generated by the offshore wind farm over a set period. In essence, it makes offshore wind projects financially viable by providing revenue stability and mitigating market risks for developers. On the other hand, costs are high, as for Southern North Sea II, the state has decided that grid investments should be paid by the operator companies, which is uncommon practice in Europe and strongly increases costs for the offshore wind industry.

Time is recognized as an important resource. Thus far, the industry has lost a lot of time due to unclear legal frameworks around licensing processes, as well as long procedures at state level with respect to the planning and opening of sites, impact assessments and consultation procedures. Experience and upcoming regulations might speed up licensing processes.

Recent developments have strengthened collective power to achieve common goals. Two examples can be mentioned: 1) Offshore Norway and three fisheries associations developed a handbook and set of guiding principles aimed at fostering coexistence and mitigating conflicts (Offshore Norge et al., 2023). 2) The Ministry of Energy initiated a collaborative platform dedicated to offshore wind, which features a specialized working group focused on coexistence representing fisheries, offshore energy sectors, governmental bodies, and environmental organizations.

6.4.2 How the EGD influences the dynamics within the MLMGA of offshore wind development in Norway

In Norway, one of the key discourses revolves around the need to create new industries, competence and jobs. The key focus is on overcoming barriers related to the unclarities in the legal framework and the rules and regulations around licensing procedures for offshore wind development. Offshore wind has been prioritized as one of two green growth industries in a White Paper in 2021, which in turn is strongly connected to the eventual phasing out of the oil and gas industry. It is our hypothesis that the Green Deal Industrial Plan, with its proposed Net-Zero Industry Act, can become a game changer with respect to access to funding, simplification of procedures, and larger predictability for the industry (which now are all still discussed as barriers to overcome), see Figure 12.

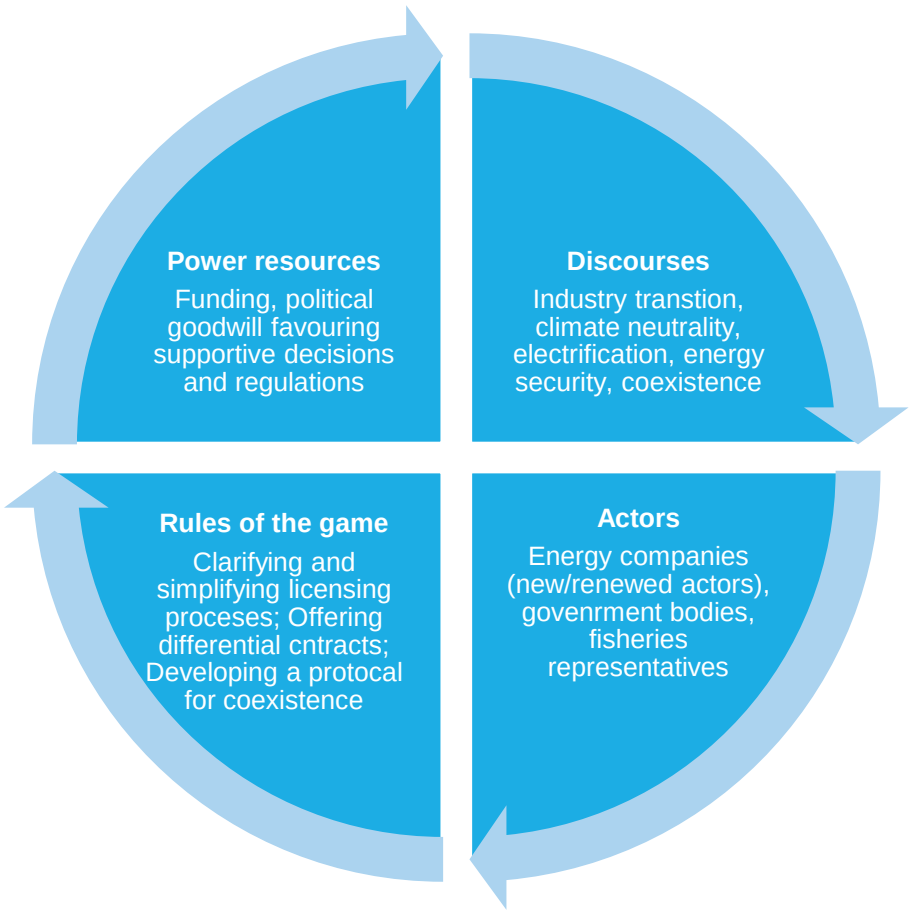

FIGURE 12 NEW DYNAMICS IN THE MLMGA FOR OFFSHORE WIND IN NORWAY

6.4.3 Drivers and challenges

A key driver in the Norwegian context is the need for new industries and jobs. The eventual phasing out of the oil and gas activities on the Norwegian Continental Shelf calls for the growth of new sectors and creation of new jobs in the decades to come. Floating wind has been particularly emphasized as an area where Norway can benefit from its competitive advantage as the floating wind sector has strong overlaps (e.g. supply chain) with the petroleum sector. However, with the slow pace of developments in recent years, Norway risks to lose expertise.

Another key driver is the discourse around energy security in a wide sense. In the coming years, increased energy is needed to fuel the green transition. In addition, geopolitical developments since 2022 have increased the focus on Norway as a supplier of fossil and renewable energy sources. The continued supply of fossil fuels to Europe puts an increased focus on electrification of offshore oil and gas extraction through offshore wind.

Key challenges are manifold but relate most importantly to the unclarities in the legal framework (partly in relation to EEA competition policy), the lack of competence, manpower and infrastructure for an industry transition, increased costs, and the lengthy opening procedures and need to address issues around coexistence and conflict.

6.5 Conclusions regime complex Marine Energy

Drivers

We have identified several discourses that drive developments in the marine energy regime complex, such as acceleration, repowering, and energy security. The discourse around energy security intensified with the start of the war in Ukraine, which led the EU to introduce its REPowerEU plan. This plan can be considered a central driver behind increased renewable energy targets and policies that focus on, for example, the simplification of regulatory procedures and the establishment of ‘renewables acceleration areas’.

Another discourse revolves around the establishment of an integrated energy system and transboundary collaboration. In the Danish and Celtic cases in particular, the focus on developing projects of common and mutual interest at sea basin level drives collaboration.

An additional dual, partly paradoxical discourse centres around competence and skill development. On the one hand, there is a strong focus and expectation that pioneering offshore renewable industries will have a competitive advantage through their possibility to build on the experience and expertise in existing maritime industries, particularly the oil and gas industry. On the other hand, the lack of skills, manpower, competence, and expertise have been emphasized as a main challenge in making this transition work. Both perspectives underscore a sense of urgency.

From a resource perspective, the relaxation of EU State Aid rules has enabled Member States to offer subsidies for renewable energy projects and provide incentives for fast deployment.

Challenges

Several common challenges impede progress. Firstly, there are timing disparities between EU ambitions and Member States' specific regulatory and contextual issues. While the EU seeks acceleration under the EGD, lengthy and complex consenting, licensing and tendering processes persist in many Member States, which leads to long lead times and uncertainty for renewable energy projects. For example, it is currently unclear how EGD policies aiming to simplify licensing procedures will influence the regulations concerning requirements for environmental impact assessments. Furthermore, diverse political priorities amongst Member States hampers progress towards the EGD objective of an integrated energy system.

Additionally, time is required to develop necessary technologies and infrastructure, including port facilities for the deployment of offshore wind parks, hydrogen infrastructures, and so forth. Grid capacity limitations and storage constraints hinder acceleration, despite discourses that suggest that technological challenges can be overcome with adequate resources.

Costs, and the pre-commercial status of some technologies e.g. floating wind, poses a major challenge for investment. The offshore renewable sector is largely pioneering, and some newer technologies are dependent on state support. In addition, material costs have been increasing over the past years, partly due to the Ukraine war. Additionally, China's growing market share in offshore wind capacity heightens pressure on EU competitiveness and its attractiveness for marine energy investments. Recent policy innovations such as the EU's Critical Raw Materials Act aim to reduce reliance on China for the supply of critical minerals. However, it is unlikely that supplies from within the EU will be sufficient to meet the forecasted demand, meaning that the offshore wind industry remains exposed to volatilities in global minerals markets[128].

Finally, the discourse around acceleration diverts attention away from biodiversity protection and sustainability concerns, raising questions about how rapid offshore energy development can be compatible with biodiversity targets e.g. 30x30 agenda, as well as co-existence with fisheries and other marine interests.

[128] Delivering on the EU offshore renewable energy ambitions. (2023, October 24). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of The Regions. Retrieved April 24, 2024, from eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52023DC0668

7 Regime complex Marine Plastics

7.1 Green deal developments around Marine Plastics

The framework addressing marine plastics is mostly related to two key elements of the EGD: 'Mobilising industry for a clean and circular economy' and establishing 'A zero pollution ambition for a toxic-free environment'. Two 'high-level' strategies support these elements, respectively the **New Circular Economy Action Plan** and the **Action Plan: Towards Zero Pollution for Air, Water and Soil**. These strategies broaden the scope of the initiative to encompass all forms of pollution, setting ambitious targets for reducing contaminants and preserving ecosystem health.

The New Circular Economy Action Plan aims to improve the lifecycle of materials to ensure sustainability from production to disposal. It entered into force in 2020 and updated the first EU Circular Economy Action Plan that was launched in 2015. It aims to transform the EU's economy into a circular model, maximize the lifecycle of resources and minimize waste. To fulfil its main objective, the plan encompasses sub-objectives like designing sustainable products, empowering consumers, fostering circularity in production, improving waste management, and promoting a toxic-free environment. It targets key sectors by enhancing the sustainability of electronics, vehicles, and packaging, and by advocating for a comprehensive approach to plastic use, including a significant reduction in microplastics.

The Action Plan: Towards Zero Pollution for Air, Water and Soil' serves as a strategic guide to incorporate pollution prevention into all relevant EU policies. Launched in 2021, the plan aims to direct the EU towards a 2050 vision of a Healthy Planet for All. The Action Plan employs a variety of mechanisms for implementation, such as inspections, compliance checks, promoting advanced monitoring technologies, and regulatory alignment with stronger provisions for tackling pollution sources across sectors like agriculture, industry, transport, and energy.

In tandem with these strategic efforts, there has been an increasing public awareness about the consequences of marine plastic pollution. This awareness has significantly influenced both the development of pre-European Green Deal policies and the evolution of consumer behaviors towards more sustainable choices [129]. Furthermore, the growing attention to international cooperation for marine protection and global treaties, such as the anticipated Global Plastic Treaty, emphasizes the necessity of cross-border collaboration in combating marine pollution. Such international engagements can promote the adoption of effective practices in managing Abandoned, Lost, or otherwise Discarded Fishing Gear (ALDFG) and are in line with the EGD's aim of achieving a pollution-free marine environment.

This regime complex includes two specific case studies that further illustrate the application of these strategies. The first focuses on the MLMGA in the Baltic Sea region, assessing the management of ALDFG and exploring how regional governance through HELCOM is innovating to align with the EGD's objectives. The second case study examines MLMGAs for agricultural sources of marine microplastic pollution in the Mediterranean region, analyzing the

[129] Krajnc, D., Kovačič, D., Žunec, E., Brglez, K., & Kovačič Lukman, R. (2022). Youth awareness and attitudes towards a circular economy to achieve the Green Deal goals. Sustainability, 14(19), 12050

impact of governance on actor capabilities to implement sustainability changes, specifically in non-packaging plastic uses such as films and greenhouse covers.

7.2 Case 8 Marine litter from fishing gear in the Baltic Sea

7.2.1 The MLMGA in the Baltic Sea region for Abandoned, Lost, or otherwise Discarded Fishing Gear (ALDFG)

This case study assesses the changing nature of Multi-layered Marine Governance Arrangements (MMGAs) for ALDFG in the Baltic Sea region. The case study is used to evaluate the extent to which a regional level governance arrangement, focusing on HELCOM, is (possibly) changing and innovating to achieve the objectives of the EGD. It is also used to explore how evolving marine governance arrangements regarding ALDFG within the Baltic Sea region could help to overcome potential institutional barriers as well as explore collaboration dynamics, actor capabilities and opportunities for e-governance.

Various factors contribute to fishing gear becoming ALDFG such as adverse weather conditions, gear conflicts, cost of gear retrieval, vandalism and theft, and illegal and unregulated and fishing activities130. ALDFG contributes to the broader challenge of marine plastic pollution and, besides negatively impacting marine habitats and wildlife, it also poses significant risk to maritime transport activities131. These aspects make it an interesting case to explore from a governance perspective. Studying ALDFG in the Baltic Sea region allows for a review of governance and policy developments at the intersection of local, regional, and EU governance levels.

At the international level, instruments like the United Nations Fish Stocks Agreement (UNFSA), United Nations General Assembly (UNGA) Resolutions, and guidelines from the Food and Agriculture Organization (FAO) play crucial roles in managing ALDFG. The International Maritime Organization also contributes through the International Convention for the Prevention of Pollution from Ships (MARPOL) and the London Convention with its 1996 Protocol. European instruments include the new Circular Economy Action Plan, the Zero Pollution Action Plan, the Single-use Plastic Directive (SUPD) with its Extended Producer Responsibility scheme, and the Port Reception Facilities Directive. On the other hand, at the regional level, the HELCOM Revised Regional Action Plan on Marine Litter plays an important role in the management of ALDFG within the Baltic Sea region. The instruments will be discussed in more detail in the subsequent "Rules of the Game" section.

Rules of the Game

The governance framework of ALDFG is shaped by various formal and informal rules at the international, European, and regional level.

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130 Macfadyen, G., Huntington, T., & Cappell, R. (2009). Abandoned, lost or otherwise discarded fishing gear (No. 523). Food and Agriculture Organization of the United Nations (FAO)

131 Environmental Investigation Agency. (2023). Untangled: The plastics treaty's critical role in tackling fishing gear. Policy briefing for the Intergovernmental Negotiation Committee for UNEA 5/14. May 2023. Available at: https://eia-international.org/wp-content/uploads/2023-Fishing-gear-policy-briefng.pdf

International instruments

At the international level, the United Nations Fish Stocks Agreement (UNFSA) specifies the management of migratory fish stocks and requires both coastal states and states fishing in the high seas to minimize catch by ALDFG. The United Nations General Assembly (UNGA) Resolutions highlight the collective international commitment to sustainable fisheries, urging states and international bodies to take comprehensive actions against ALDFG132. Similarly, the Food and Agriculture Organization of the United Nations (FAO) address ALDFG through a set of soft instruments, focusing on responsible fishing practices, bycatch management, and gear marking. The Code of Conduct for Responsible Fisheries encourages sustainable practices and gear selectivity to minimize ALDFG133. The International Guidelines on Bycatch Management advocate for ecosystem approaches and technologies to reduce ghost fishing134. The Voluntary Guidelines on the Marking of Fishing Gear aim to improve gear recovery and identification, thereby reducing ALDFG and its impacts on marine environments[135].

The International Maritime Organization has developed two key instruments relevant to ALDFG: The International Convention for the Prevention of Pollution from Ships (MARPOL), which aims to prevent pollution from ships by setting standards for the discharge of wastes, including fishing gear through its Annex V and the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Convention) and its 1996 Protocol focus on the deliberate disposal of wastes at sea, including fishing gear[136]. Moreover, the recent negotiations on the establishment of a global plastic treaty also highlight the critical issue of ALDFG, emphasizing international cooperation and measures to prevent, reduce, and eliminate the environmental impact of ALDFG[137] [138].

European instruments

At the EU level various policies emerged to help tackle the problem of ALDFG. The Circular Economy Action Plan was adopted by the European Commission in 2020 to support the EGD's goal of achieving a Zero Pollution Ambition for a Toxic-free Environment and supports efforts to minimize waste through the reuse and recycling of products[139].

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[132] Hodgson, S. 2022. Legal aspects of abandoned, lost or otherwise discarded fishing gear. Rome, FAO and IMO. https://doi.org/10.4060/cb8071en

[133] Food and Agriculture Organization of the United Nations (FAO). (1995). Code of Conduct for Responsible Fisheries. FAO. Rome, Italy. P, 41

[134] Food and Agriculture Organization of the United Nations (FAO). (2011). International guidelines on bycatch management and reduction of discards. Food and Agriculture Organization of the United Nations

[135] Food and Agriculture Organization of the United Nations (FAO). (2019). Voluntary guidelines on the marking of fishing gear

136 Hodgson, S. 2022. Legal aspects of abandoned, lost or otherwise discarded fishing gear. Rome, FAO and IMO. https://doi.org/10.4060/cb8071en

[137] Environmental Investigation Agency. (2023). Untangled: The plastics treaty's critical role in tackling fishing gear. Policy briefing for the Intergovernmental Negotiation Committee for UNEA 5/14. May 2023. Available at: https://eia-international.org/wp-content/uploads/2023-Fishing-gear-policy-briefng.pdf

[138] United Nations Environment Programme. (2023). Revised draft text of the international legally binding instrument on plastic pollution, including in the marine environment. Available at: https://wedocs.unep.org/bitstream/handle/20.500.11822/44526/RevisedZeroDraftText.pdf

[139] European Commission. (2020). A new Circular Economy Action Plan: For a cleaner and more competitive Europe. Communication, COM/2020/98 final

Additionally, the Zero Pollution Action Plan, although it does not directly mention the problem of ALDFG, aims to significantly reduce pollution in the EU by 2050. The Zero Pollution Action Plan includes policy targets for 2030, including the reduction of plastic litter at sea by 50%, the reduction by 30% of microplastics released into the environment, and the reduction of waste generation and by 50% residual municipal waste[140]. The EU Action Plan: Protecting and restoring marine ecosystems for sustainable and resilient fisheries (Marine Action Plan) also emphasizes sustainable and resilient fisheries by advocating for the use of low-impact fishing gears and improved gear selectivity, directly targeting the reduction of ALDFG to protect marine ecosystems[141].

Although the Single-Use Plastic Directive entered into force prior to the EGD, it is an essential part of the EU Strategy for Plastics in a Circular Economy, which introduces specific measures to reduce certain plastic items and fishing gears (see Textbox 1 below). The SUP applies to fishing and aquaculture gear used in both commercial and recreational settings and introduces the Extended Producer Responsibility (EPR) scheme. This scheme requires producers, including manufacturers, sellers, and importers, to engage in the responsible management of plastic items and seeks to hold them accountable for the environmental impacts of their products throughout the product lifecycle. The EPR scheme has the potential to help transform the production, use, and disposal of single-use plastic products towards sustainability[142].

Art. 1: "This Directive applies to the single-use plastic products listed in the Annex, to products made from oxo-degradable plastic and to fishing gear containing plastic";

Art. 3 (4): "'fishing gear' means any item or piece of equipment that is used in fishing or aquaculture to target, capture or rear marine biological resources or that is floating on the sea surface, and is deployed with the objective of attracting and capturing or of rearing such marine biological resources";

Art. 3 (5): "'waste fishing gear' means any fishing gear covered by the definition of waste in point 1 of Article 3 of Directive 2008/98/EC, including all separate components, substances or materials that were part of or attached to such fishing gear when it was discarded, including when it was abandoned or lost";

Art. 8 (7): "Each Member State shall ensure that a producer established on its territory, which sells single-use plastic products listed in Part E of the Annex and fishing gear containing plastic in another Member State in which it is not established, appoints an authorised representative in that other Member State";

Art. 8 (8): "Member States shall ensure that extended producer responsibility schemes are established for fishing gear containing plastic placed on the market of the Member State, in accordance with Articles 8 and 8a of Directive 2008/98/EC.

Member States that have marine waters as defined in point 1 of Article 3 of Directive 2008/56/EC shall set a national minimum annual collection rate of waste fishing gear containing plastic for recycling.

[140] European Commission. (2021). EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil'. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021DC0400&qid=1623311742827

[141] European Commission. (2023). EU Action Plan: Protecting and restoring marine ecosystems for sustainable and resilient fisheries. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52023DC0102

[142] European Commission. (2019a). On the reduction of the impact of certain plastic products on the environment. Directive, 2019/904.

Member States shall monitor fishing gear containing plastic placed on the market of the Member State as well as waste fishing gear containing plastic collected and shall report to the Commission in accordance with Article 13(1) of this Directive with a view to the establishment of binding quantitative Union collection targets";

Art. 8 (9): "With regard to the extended producer responsibility schemes established pursuant to paragraph 8 of this Article, Member States shall ensure that the producers of fishing gear containing plastic cover the costs of the separate collection of waste fishing gear containing plastic that has been delivered to adequate port reception facilities in accordance with Directive (EU) 2019/883 or to other equivalent collection systems that fall outside the scope of that Directive and the costs of its subsequent transport and treatment. The producers shall also cover the costs of the awareness raising measures referred to in Article 10 regarding fishing gear containing plastic. The requirements laid down in this paragraph supplement the requirements applicable to waste from fishing vessels in Union law on port reception facilities. Without prejudice to technical measures laid down in Council Regulation (EC) No 850/98 (24), the Commission shall request the European standardisation organisations to develop harmonised standards relating to the circular design of fishing gear to encourage preparing for re-use and facilitate recyclability at end of life";

Art. 10: "(a) the availability of re-usable alternatives, re-use systems and waste management options for those single-use plastic products and for fishing gear containing plastic as well as best practices in sound waste management carried out in accordance with Article 13 of Directive 2008/98/EC; (b) the impact of littering and other inappropriate waste disposal of those single-use plastic products and of fishing gear containing plastic on the environment, in particular on the marine environment;

Art. 13: "data on fishing gear containing plastic placed on the market and on waste fishing gear collected in the Member State each year".

Art. 15: "That proposal shall, if appropriate, set binding quantitative consumption reduction targets and set binding collection rates for waste fishing gear.

TEXTBOX 1 RELEVANT ARTICLES RELATED TO ALDFG FOUND WITHIN THE SUP DIRECTIVE.

The Port Reception Facilities Directive aims to reduce discharges of waste from ships at sea. It enhances port facilities for collecting ship-generated waste and requires Member States to ensure the availability of adequate port reception facilities. The Directive applies to all ships visiting EU ports regardless of their flags and obliges ships to deliver their waste at these facilities. It also mandates EU Member States to collect and report data on the volume and type of passively fished waste including ALDFG, to enhance monitoring and compliance. Additionally, it introduces a cost recovery system to discourage the discharge of waste at sea by including both indirect fees for all ships, irrespective of their actual waste delivery, and direct fees based on the type and quantity of waste delivered[143].

Regional instruments

At the regional level the main instrument of interest in this case study is the HELCOM Revised Regional Action Plan on Marine Litter, which introduces specific actions for all HELCOM's Contracting Parties4. Ten actions specifically focus on ALDFG calling for collection, separation, evaluation, and prevention strategies (see Textbox 2). They include guidelines for recreational fisheries, gear marking and design innovations, mapping and removal of ghost

[143] European Commission. (2019b). On port reception facilities for the delivery of waste from ships, amending Directive 2010/65/EU and repealing Directive 2000/59/EC. Directive 2019/883

nets, public engagement in reporting lost gear, and the promotion of sustainability education among fishermen[144].

1. Encourage collection of ALDFG and separation of collected ALDFG from end-of life gear with a view to establish regional targets for collection of end-of-life fishing gear.
2. Elaborate guidelines on the best practices and undertake relevant measures to reduce the input of ALDFG to the Baltic Sea from recreational fisheries with a focus on gillnets taking into account geographical particularities.
3. Evaluate the amounts and composition of lost angling gear in the Baltic Sea including fishing lures and casting weights with corresponding hooks, soft plastic baits and light components and develop appropriate measures to prevent their further loss.
4. Investigate available options for fishing gear marking as a tool to prevent and reduce gear losses and produce recommendations to improve gear marking to increase the effectiveness of this tool.
5. Consider innovative constructive features of fishing gear as a tool to prevent and reduce gear losses and a tool to prevent and reduce lost fishing gears from ghost fishing.
6. Continue the mapping of areas with high potential for ALDFG accumulation (hot spots) in all HELCOM countries with subsequent update of the HELCOM Map&Data service.
7. Initiate removal of ghost nets and their safe management on land applying the best practices for ALDFG removal in national or international campaigns.
8. HELCOM to join the Global Ghost Gear Initiative (GGGI) which is the world's largest cross-sectoral alliance committed to driving solutions to the problem of ALDFG worldwide.
9. Engage fishermen (both recreational and commercial) and general public to report on lost and observed ghost fishing gear utilizing related reporting tools (e.g. Swedish example of GhostGuard app or German Geistertaucher).
10. Consider the development of HELCOM Recommendation and guidelines on the reduction of marine litter through the implementation of Sustainability Education Programmes for Fishers taking into account results of the ongoing work on the revision of IMO STCW-F

TEXTBOX 2: THE TEN ACTIONS ADDRESSING ALDFG IN THE BALTIC REGION LISTED IN THE HELCOM REVISED REGIONAL ACTION PLAN ON MARINE LITTER[145].

Alongside these formal measures, informal rules can include industry best practices, collaborative initiatives, and knowledge sharing.

Actors

The list of actors involved in the governance of ALDFG is extensive and can be grouped between local, national, regional, European, and international levels.

International

At the international level, key actors include the relevant agencies of the United Nations such as the International Maritime Organization (IMO) and the Food and Agriculture Organization (FAO) as well as alliances such as the Global Ghost Gear Initiative. Furthermore, the Baltic

[144] HELCOM. (2021). Revised Regional Action Plan on Marine Litter. Available at: https://helcom.fi/wp-content/uploads/2021/10/HELCOM-Recommendation-42-43-3.pdf
[145] HELCOM. (2021).

and International Maritime Council (BIMCO) can also result influential as the world's largest international shipping association.

European

At the European level, the European Commission and in particular its Directorate General for Maritime Affairs and Fisheries (DG MARE) are important actors that often proposed policies aimed at reducing the issue of ALDFG. The European Maritime Safety Agency (EMSA) is also an important actor in the Baltic Sea region as it supports Member States in implementing strategies aimed at reducing pollution from ships. Additionally, fisheries advice in the region is provided by the International Council for the Exploration of the Sea (ICES) and the European Union's Scientific Technical and Economic Committee for Fisheries (STECF).

Regional

Regionally, intergovernmental organizations such as HELCOM and the Council of the Baltic Sea States (CBSS) as well as stakeholder-led organization like the Baltic Sea Advisory Council (BSAC) are important actors that directly contribute to the management of ALDFG in the Baltic Sea region. Furthermore, various NGOs have a specific focus on sustainable fisheries and pollution reduction strategies. Within those operating in the Baltic Sea region, the key NGOs are the WWF Baltic and the Baltic Sea Action Group.

National

Nationally, the HELCOM Contracting Parties (Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, and Sweden) are crucial, while fishing vessels from nine countries operate in the Baltic Sea, the highest number of large fishing ships come from Sweden, Denmark, and Poland[146]. Furthermore, coastal fisheries in the Baltic Sea are managed nationally.

Fisheries

Fisheries are the key actors when it comes to ALDFG as their operations can directly contribute to the generation of ALDFG.

Discourses

ALDFG pose a multifaceted challenge for the Baltic Sea Region and a number of discourses across environmental, economic, and social dimensions can be identified.

The environmental discourse primarily focuses on the ecological impacts of ALDFG, namely destruction or degradation of marine habitats, species and organisms. ALDFG is particularly insidious because it can persist over time, entangling fish, marine mammals, and birds, leading to their injury or death. The discourse also extends to the impacts on benthic environments such as the sea floors, which are crucial for various marine life cycles147.

From an economic perspective, the dialogue is twofold: on the one hand, the fishing industry is aware of the costs associated with gear loss, not just in terms of replacement but also in

[146] ICES (2021) Fishing overview of the Baltic Sea Region. Available at: https://www.fishsec.org/app/uploads/2022/10/FisheriesOverview_BalticSea_2021_ICES.pdf

[147] Kammann, U., Nogueira, P., Wilhelm, E., Int-Veen, I., Aust, M. O., & Wysujack, K. (2023). Abandoned, lost or otherwise discarded fishing gear (ALDFG) as part of marine litter at the seafloor of the Baltic Sea–Characterization, quantification, polymer composition and possible impact. Marine Pollution Bulletin, 194, 115348

lost productivity. On the other hand, there are financial considerations related to compliance with regulations aimed at preventing gear loss. There is also a growing discussion about the economic opportunities that could arise from the recovery and recycling of ALDFG148.

Stakeholder responsibility is also a key theme in the ALDFG discourse, with an emphasis on the roles of different stakeholders. Fishermen, as primary users of the gears, are seen as central to both the problem and its solution. Policymakers are called upon to create supportive policies and regulations that can mitigate the issue while various NGOs are increasingly showing interest in the problem. The narrative here is about shared responsibility and the potential of collaborative action for the greater good of marine ecosystems.

Finally, the discourse of ALDFG in the Baltic Sea region is increasingly connected to the principles of the circular economy. This narrative shifts the focus from linear consumption models to those that emphasize the reuse of materials. In the context of ALDFG, this translates into strategies for waste prevention, extending the product life cycle of fishing gear, and creating economic value from what was once considered waste. This approach not only has the potential to reduce environmental impact but also to stimulate economic innovation and resilience within the fishing industry[149].

Power resources

The dynamics of power and influence play a role in addressing the issue of ALDFG in the Baltic Sea region. A variety of entities, ranging from EU institutions to environmental NGOs, actively shape the policies and actions in this arena.

European policies

DG MARE is a main actor in the EU when it comes to the maritime sector and fisheries policies. It guides and integrates ALDFG concerns into broader maritime policy frameworks. As such, it holds substantial power in setting the agenda and directing resources towards addressing the ALDFG challenge.

HELCOM's role

HELCOM, acts as a coordinator among the Baltic Sea countries, which includes both EU and non-EU parties, managing efforts to implement agreed policies.

Baltic Sea Advisory Council’s influence

BSAC plays a pivotal role in bringing different voices to the policy-making table. It ensures that various stakeholders, from the fishing industry to environmental advocates, have a say in the policies that affect them. By influencing EU and regional policy directions, BSAC demonstrates the power of collective consultation and representation.

Fishing industry's operational impact

The fishing industry is the major player when it comes to ALDFG. Its practices can contribute to the problem, but it also can lobby for regulations that align with the practical realities of

[148] Liotta, I., Avolio, R., Castaldo, R., Gentile, G., Ambrogi, V., Errico, M. E., & Cocca, M. (2024). Mitigation approach of plastic and microplastic pollution through recycling of fishing nets at the end of life. Process Safety and Environmental Protection, 182, 1143-1152

[149] James, N. A. (2023). Developing a Circular Economy for Fishing Gear in the Northern Periphery and Arctic Region: Challenges and Opportunities. Marine Plastics: Innovative Solutions to Tackling Waste, 45-57

fishing. This sector's ability to push for practical and feasible regulations demonstrates its significant agent power in shaping policy outcomes. Furthermore, technological advances in fishing gear design, such as the development of biodegradable materials and improved traceability through gear marking, play a crucial role in reducing ALDFG. These innovations not only can enhance the recyclability of gear but also contribute to the sustainability of marine ecosystems by mitigating ghost fishing and marine pollution[150].

The adoption of cutting-edge technologies and materials in fishing gear design can significantly mitigate the problem of ALDFG. Advanced materials that are easier to recycle and more sustainable fishing gear that includes traceable markings could reduce ghost fishing and facilitate gear recovery. Nonetheless, fishing gear often contains organic and inorganic contaminants from their use, which makes recycling processes difficult and although new materials are being studies, they also present unique recycling challenges at the end of their lifecycle due to their complex polymer structures[151].

Furthermore, effective monitoring and enforcement are enhanced by technological advancements that allow for real-time tracking and management of fishing gear. The implementation of GPS and audio-frequency identification (RFID) tagging of gear improves traceability and accountability, facilitating easier recovery of lost or discarded gears and helping regulatory bodies monitor compliance with fishing regulations. Advanced surveillance technologies, including satellite imagery and automated identification systems (AIS) are becoming essential tools in monitoring fishing activities. These technologies help ensuring that fishing operations within the Baltic Sea are conducted within the legal frameworks, aiming to reduce ALDFG by providing authorities with the means to detect and respond to policy violations promptly[152].

Environmental NGOs' advocacy

Organizations like the WWF or the Global Ghost Gear Initiative can influence by shaping public opinion and discourse on ALDFG. They have the moral power to affect public sentiment and pressure governments into taking action.

7.2.2 How the EGD influences the dynamics within the MLMGA of ALDFG in the Baltic Sea

The MLMGA of ALDFG in the Baltic Sea has been shaped by a mix of instruments, both preceding and following the introduction of the EGD in December 2019 (see Figure 13). Internationally, policies targeting ALDFG were established already before the EGD, establishing some standards to address ALDFG. Regionally, the HELCOM Revised Action Plan on Marine Litter (updated post-EGD) exemplifies this evolution. This regional plan specifically targets marine litter and highlights a strong and targeted response to marine litter challenges, including ALDFG, by delineating actions and recommendations for Member States to follow.

[150] Sala, A. & Richardson, K. (2023). Fishing gear recycling technologies and practices. Rome, FAO and IMO. https://doi.org/10.4060/cc8317en
[151] Sala, A. & Richardson, K. (2023).
[152] Sala, A. & Richardson, K. (2023).

At the EU level, the SUPD is one of the key instruments that directly tackles ALDFG. By focusing on the reduction of plastic waste, including fishing gear, the SUPD mandates measures that are expected to mitigate ALDFG's impact on marine environments. Complementing this, the Port Reception Facilities Directive is instrumental in improving waste management at ports, thus reducing the likelihood of marine waste disposal. Following the introduction of the EGD, the Circular Economy Action Plan, the Zero Pollution Action Plan, and the Marine Action Plan were introduced, which all contribute, both directly and indirectly, to the diminishment of ALDFG, reflecting the EGD's overarching commitment to a sustainable and resilient marine habitat.

Discourses within the MLMGA of ALDFG are now increasingly aligned with the principles of sustainability and circular economy, as advocated by the EGD (see Figure 13). The dialogue surrounding ALDFG has expanded to consider the lifecycle of materials, and the socioeconomic implications of marine litter.

Power resources within the ALDFG MLMGA have been redefined by the EGD's strategic directives. The EC, particularly DG MARE, has considerable power in setting the agenda for addressing ALDFG. Organizations such as HELCOM are empowered to enforce regional compliance, and the fishing industry's role in operationalizing these changes has been emphasized as a critical force in shaping outcomes.

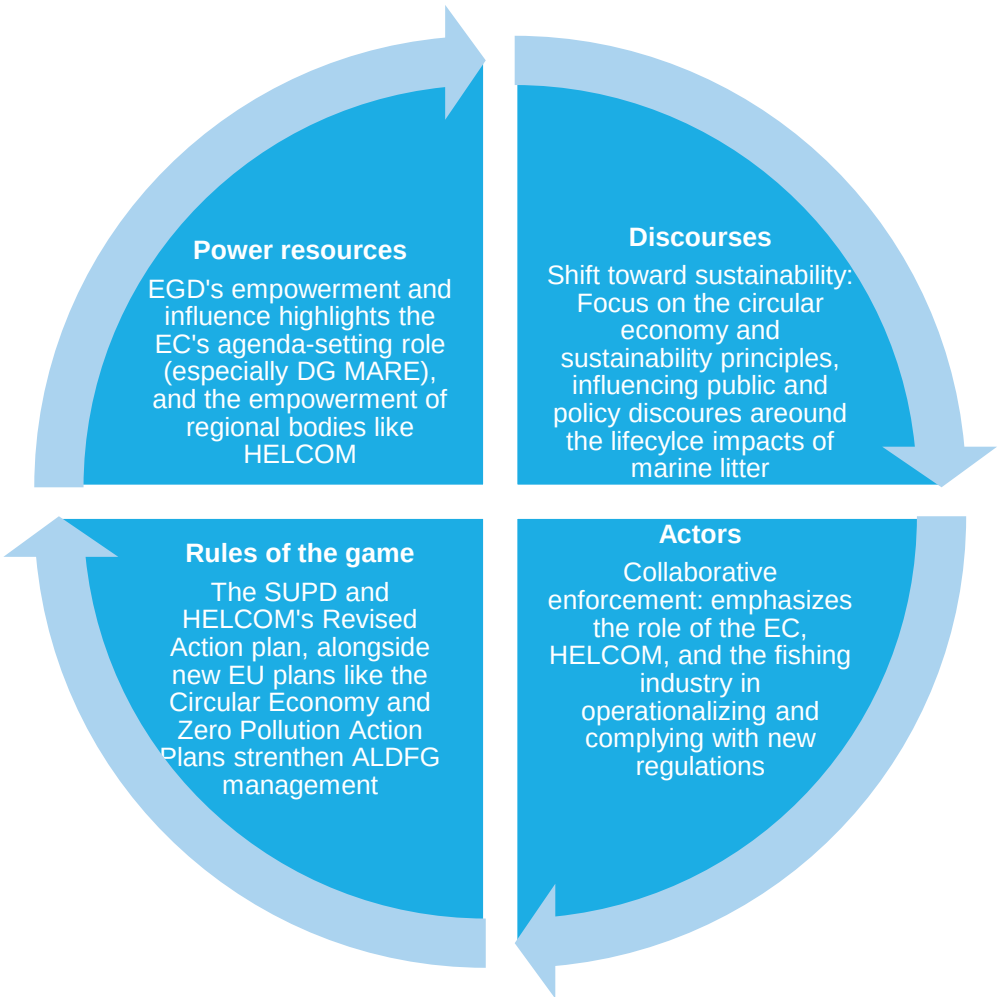

FIGURE 13 NEW DYNAMICS IN THE MLMGA FOR ALDFG IN THE BALTIC SEA

7.2.3 Drivers and challenges

Addressing ALDFG in the Baltic Sea faces several drivers and challenges. Below are the main drivers and challenges related to the problem of ALDFG in the Baltic Sea region and that can affect the success of the EGD.

Drivers:

- Policy integration: The EGD provides an integrated policy framework that can drive coherence between the fishing and biodiversity objectives, promoting synergies in environmental protection efforts.
- Technological advances: Innovations in sustainable fishing gear production and marking can help to reduce ALDFG and facilitate the achievement of the EGD's objectives.
- Monitoring and enforcement: Good monitoring and strict enforcement of regulations can drive compliance with EU policies, ensuring that the MLMGA of ALDFG adheres to the standards set by the EGD. This requires the implementation of robust mechanisms at ports for the reception, management, and recycling of ALDFG, coupled with the use of monitoring technologies and mandatory reporting for fishing gear. Monitoring is currently enhanced by technological advancements that allow for real-time tracking and management of fishing gear. These technologies can contribute to better monitoring of fishing operations and prevent possible violations which would lead to more ALDFG[153].
- International collaboration: The growing emphasis on global treaties and international cooperation for marine protection can contribute to the implementation of good practices for managing ALDFG, contributing to the EGD's objective of pollution-free marine environment.
- Public awareness: Increasing public consciousness about marine pollution and its impacts can drive consumer behavior towards sustainable products, aiding in the EGD's objective of a pollution-free marine environment.

Challenges:

- Lack of binding regulation: the lack of binding regulations can lead to inconsistent enforcement and compliance efforts by different stakeholders operating in the Baltic Sea region.
- Economic vs environmental balance: Balancing environmental goals with the socioeconomic needs of fishing communities presents a significant challenge, as stringent regulations may be viewed as detrimental to the livelihoods of those dependent on fishing.
- Coordination among different levels of governance: The complexity of coordinating actions and policies across local, national, regional, and international levels of governance creates barriers to implementing coherent strategies that align with the EGD's comprehensive approach to environmental management.
- Technological and Knowledge Gaps: Despite advances, gaps in technology and knowledge regarding the most effective methods to prevent, monitor, and manage ALDFG limit the capacity to fully address this issue, challenging the EGD's ambition for innovation-driven environmental protection.

[153] Sala, A. & Richardson, K. (2023). Fishing gear recycling technologies and practices. Rome, FAO and IMO. https://doi.org/10.4060/cc8317en

7.3 Case 9 Microplastic pollution of the Mediterranean Sea

7.3.1 The MLMGAs for agricultural sources of marine microplastic pollution within the European Mediterranean

The focus of this case study is to explore how multilevel governance for agricultural sources of marine microplastic pollution influences actors abilities to enact change for sustainability goals in the Mediterranean area. Specifically, it looks into films and greenhouse cover types of plastic, primarily low-density polyethylene, not including packaging plastics. This section looks at how the European Green Deal has shaped EU and UNEP/MAP-level governance arrangements to tackle agricultural sources of microplastic pollution.

Microplastic pollution is an emerging and rapidly growing field of regulation at the EU and Mediterranean regional levels. The Plastics Strategy[154] largely set the EU's agenda for microplastics by tackling this source of marine pollution by source (i.e. cosmetics, textiles, etc.). This approach was reiterated and strengthened within the EGD and its subsequent Action Plans: the Zero Pollution[155] and the New Circular Economy[156] Action Plans. Agriculture as a source is not listed as a key priority within EU policies and as such is not yet directly regulated. However, non-packaging agricultural plastics are covered under voluntary Extended Producer Responsibility (EPR) commitments.[157] Under the Zero Pollution Action Plan, the Mission Healthy Oceans have focused on marine plastic pollution in the Mediterranean sea, including microplastics, as their key focus.[158] The organisation running this project is the BlueMissionMed lighthouse which collaborates with MedWaves, a regional activity centre (RAC) for the UNEP/MAP, signalling a site for cooperation in this policy domain.

In the UNEP/MAP, marine plastic pollution is regulated under the protocol for the protection of the Mediterranean Sea against pollution from Land-Based Sources (adopted on 17 May 1980, in Athens) through their Regional Plan for Marine Litter Management in the Mediterranean

[154] Commission, E. (2018). COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS A European Strategy for Plastics in a Circular Economy. Retrieved March 25, 2024, from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A28%3AFIN

[155] Commission, E. (2021). COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS Pathway to a Healthy Planet for All EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil'. Retrieved March 25, 2024, from https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=COM%3A2021%3A400%3AFIN

[156] Commission, E. (2020). COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS A new Circular Economy Action Plan For a cleaner and more competitive Europe. Retrieved March 25, 2024, from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2020%3A98%3AFIN

[157] EIP-AGRI, T. (2021, February 5). EIP-AGRI Focus Group Plastic footprint: Final report. EIP-AGRI - European Commission. Text, . Retrieved March 25, 2024, from https://ec.europa.eu/eip/agriculture/en/publications/eip-agri-focus-group-plastic-footprint-final

[158] BlueMissionMed. (n.d.). BlueMissionMed – Supporting the mediterranean sea basin for the implementation of the EU Mission Restore our Ocean and Waters. Retrieved March 25, 2024, from https://bluemissionmed.eu/

('regional plan') which is updated biannually. In the 2021 update, provisions concerning microplastic pollution in waste management and design were first included.[159]

This study encompasses two MLMGAs: EU microplastics arrangements generally with a focus on agri-plastics; and the UNEP's Mediterranean Action Plan (regional seas convention) (UNEP/MAP) microplastics arrangements. In both case studies, the governance arrangement for microplastics and specifically agriplastics are still underdeveloped, with the process of development in this field expanding rapidly through the EGD's priorities.

Below, the two governance arrangements are analysed per dimension, to show and compare how the EGD influences EU and UNEP/MAP governance. It should be noted that in both, but mainly in the UNEP/MAP, the governance arrangement for microplastics in general, and agricultural sources of microplastics in particular, are still in the early stages of development. Thus, there is reduced information on this specific topic.

Rules of the game

EU MLMGA

Plastics Strategy 2018

This Strategy is the EU's first comprehensive package on plastics, and it sets the EU's approach and framing for its subsequent policies, including the European Green Deal. This policy establishes the EU's focus on the issue of microplastics by source, and it describes the key sources of microplastics that are present in current policy solutions: 1) intentionally-added microplastics; 2) unintentional loss of industrial plastic pellets; and 3) unintentional loss during wear and tear of products.

The key focus in this policy is its emphasis on increasing the recyclability of plastics and end-of-life solutions to prevent microplastics from entering the environment. Agri-plastics are briefly mentioned in this policy, which specifically refers to increasing their recycling to 'reduce leakage into the environment' through the implementation of EPR schemes.

Zero Pollution Action Plan 2021

This policy establishes the broad overarching priorities and principles which are embedded within microplastics governance as established through the EGD. The overall target established is to reduce pollution to levels that are no longer harmful to health by 2050, to create a toxic-free environment. Specifically for microplastics it establishes a target for reduction of microplastics leakage into the environment by 30% by 2030.

This policy establishes a *discursive shift* away from the focus on recyclability in the Plastics Strategy towards a greater emphasis on reduction and reuse by reversing the pyramid of action to 'reduce pollution at the source'. Additionally, another shift is focused on product design to lead to non-toxic material lifecycles where specific measures for microplastics are to be developed in line with its Sustainable Products policy.

[159] UNEP/MAP 2021. Regional Plan for Marine Litter Management in the Mediterranean. Retrieved March 24th from https://wedocs.unep.org/bitstream/handle/20.500.11822/37131/21ig25_27_2509_eng.pdf

This Action Plan includes stricter enforcement of the polluter pays principle to tackle pollution. It does so through the incorporation of national authorities, cross-sectoral compliance actions and other forms of inspections and compliance checks, as well as strengthening the Environmental Crime Directive.

Whilst this policy does not specifically mention agri-plastics, it does include the agricultural sector as a key sector with which to devise cross-sectoral compliance against pollution of all kinds in air, soil, and water.

New Circular Economy Action Plan 2021

This Action Plan includes more targeted measures against microplastic pollution. At the core of this Action Plan is the discursive shift to develop a strong sustainable product policy framework and to transform consumption practices to reduce waste. Central to this legislative approach will be an expansion of the Eco-design Directive, to encompass a broader range of products focusing on several key aspects of product design. Those relevant to microplastics include improving product durability, reusability, upgradeability and reparability, addressing the presence of hazardous chemicals, and increasing the recycled content in products, while ensuring performance and safety.

Microplastics are specifically regulated through measures mentioned within the prior policies, namely: 1) restricting intentionally added microplastics and tackling pellets; 2) developing a mix of measures to tackle the unintentional loss of microplastics across the products lifecycle; 3) increasing knowledge and measures for monitoring the unintentional release of microplastics into the environment and their impact on human and environmental health. Additionally, it provides further detail on the envisioned policy framework for biobased plastics, and ensures the implementation of the Single Use Plastics Ban. Agri-plastics within this case study are not covered within this Action Plan as they do not fall under the packaging plastics regulated under the Single Use Plastics (SUP) Directive.

Waste Framework Directive 2008[160]

Under the Waste Framework Directive, the notion of extended producer responsibility (EPR) is established. EPR shifts the burden of responsibility for the lifecycle of a product on the producer, whether this is for the design, waste management, or collection. In Spain, agricultural plastics are managed under voluntary EPR commitments, and are thus not formally regulated under national law. MAPLA, the association for producers of plastics for agriculture, with Agriculture Plastics Europe amongst its founding members, is the key organisation implementing these voluntary commitments.[161] These commitments mainly focus on National Collection Schemes to increase the rates of collection and recycling, thus promoting the circular economy of plastic.

[160] Parliament, E. (2008). Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance). OJ L (Vol. 312). Retrieved March 25, 2024, from http://data.europa.eu/eli/dir/2008/98/oj/eng

[161] MAPLA - Sistema de gestión de plásticos agrícolas. (n.d.). *APE Europe*. Retrieved April 30, 2024, from https://apeeurope.eu/mapla/

UNEP/MAP MLMGA

Regional Plan 2021

The 2021 iteration of the regional plan is the first to include specific provisions against microplastics. The previsions fall under the article on the prevention of marine litter, which adopts the circular economy approach and emphasises the adoption of policy tools like EPR to reduce waste. It seeks to regulate the use of primary microplastics (which include intentionally-added microplastics as per EU policy), reduce the decomposition of plastics through industry design to reduce microplastics, and to phase out chemical additives in plastic products to reduce their toxicity.

The agricultural sector and agri-plastics are not referred to within this policy.

Actors

EU MLMGA

The European Commission, primarily DG ENV, Member States, and the European Parliament are the primary EU bodies engaged in proposing and deliberating the design and implementation of current EU microplastics policies.[162]

The agri-plastics industry is represented through a series of interest groups, including Plastics Europe, Copa-Cogeca, and Agricultural Plastics Europe (APE). Plastics Europe is the main interest group representing the vast majority of the plastics industry within Europe.[163] Their aim is to minimise the environmental footprint of plastics by promoting the transition to a circular economy where plastic waste is reduced through the reuse, collection, and recycling of plastics. COPA-COGECA is a conglomerate of two European associations: COPA, which represents the farmers; and COGECA which represents the agri-cooperatives. Together they work on all issues related to EU agriculture with their aims to promote their members interests within EU decision-making.[164] However, they are listed as separate lobby groups.[165,166] APE is the industry association focusing on agri-plastics waste management to ensure profitability and sustainability in the plasticulture sector.[167] Their work primarily focuses on National Collection Schemes and improving the recyclability of agri-plastics. Whilst APE are the interest group specifically tackling the pollution source this case study, they are no longer listed as a lobby group as of October 2023.[168] APE list that they are in partnership with a series of other

[162] Florides, P., & Kramm, J. (2023). Explaining Agenda-Setting of the European Plastics Strategy. A Multiple Streams Analysis. In C. Völker & J. Kramm (Eds.), Living in the Plastic Age: Perspectives from Humanities, Social Sciences and Environmental Sciences. Campus Verlag. Retrieved March 25, 2024, from https://directory.doabooks.org/handle/20.500.12854/132638

[163] PlasticsEurope. (n.d.). Collaborations • Plastics Europe. Plastics Europe. Retrieved March 25, 2024, from https://plasticseurope.org/about-us/collaborations/

[164] COPA-COGECA. (n.d.). Copa Cogeca: Our objectives. Retrieved March 25, 2024, from https://copa-cogeca.eu/about-cogeca

[165] Lobbyfacts. (2024). European agri-cooperatives | lobbyfacts. Retrieved March 22, 2024, from https://www.lobbyfacts.eu/datacard/european-agri-cooperatives?rid=09586631237-74

[166] Lobbyfacts. (2024). European farmers | lobbyfacts. Retrieved March 22, 2024, from https://www.lobbyfacts.eu/datacard/european-farmers?rid=44856881231-49

[167] APE. (n.d.). APE Europe missions, objectives, AEI & EC. APE Europe. Retrieved March 25, 2024, from https://apeeurope.eu/ape-europe-missions-objectives-aei-ec/

[168] Lobbyfacts. (2023). Agriculture Plastics Europe | lobbyfacts. Retrieved March 25, 2024, from https://www.lobbyfacts.eu/datacard/agriculture-plastics-europe?rid=307064711264-22&sid=173673

interest groups, including Plastics Europe.[169] Additionally, APE's European Plasticulture Strategy is supported by COPA-COGECA but does not mention Plastics Europe.[170] This Strategy centres the importance of plastics for this industry and focuses solutions on reducing waste through enhanced National Collection Schemes and recycling.

Civil society for microplastics are primarily represented under the coalition Rethink Plastic which is part of the global Break Free From Plastic movement.[171] The NGOs which form this alliance are the Environmental Investigation Agency, the European Environmental Bureau, Client Earth, Seas at Risk, Surfrider Foundation Europe, the Centre for International Environmental Law, Zero Waste Europe, Greenpeace, and ECOS. They focus on three campaigns: production, toxicity, and microplastics. This alliance notes agri-plastics as one of the key sources of unintentionally released microplastics into the environment.[172] Solutions that they put forward are focused around reducing plastic use, particularly single use plastics, redesigning products, and legally binding targets and regulatory actions. Plastic Soup Foundation is another prevalent organisation in the field of microplastics which gained traction for their awareness and citizens engagement campaigns.[173] However, in the field of agriplastics, their key focus is on soil contamination from bio-based plastics and fall slightly outside the scope of this case study.

UNEP/MAP MLMGA

Within the UNEP/MAP, MEDPOL is the management unit overseeing the implementation of the regional plan. RACs working on specific themes for its implementation are the RAC for Specially Protected Areas (SPA/RAC) which looks at the intersection between microplastic pollution and conservation issues.[174] Plan Bleu is the RAC involved with data monitoring and regional assessments for plastic and microplastic pollution across the basin.[175] MedWaves, formerly the RAC for Sustainable Consumption and Production, are a cross-sectoral organisation seeking solutions to propel zero-waste and non-toxic circular economies.[176] MedWaves are involved in the BlueMed lighthouse initiative from the EU to tackle plastic pollution in the Mediterranean.

Under the framework of article 5 of the LBS protocol, "the Parties undertake to eliminate pollution deriving from land-based sources and activities, in particular, to phase out inputs of

[169] APE. (n.d.). Organization – memberships – partnerships. APE Europe. Retrieved March 25, 2024, from https://apeeurope.eu/organization-memberships-partnerships/
[170] APE. (2021, July 9). Printing of the European Plasticulture Strategy. APE Europe. Retrieved March 25, 2024, from https://apeeurope.eu/2021/07/09/printing-of-the-european-plasticulture-strategy/
[171] RethinkPlastic. (n.d.). Towards a future free from plastic pollution. Rethink Plastic. Retrieved March 25, 2024, from https://rethinkplasticalliance.eu/
[172] RethinkPlastic. 2022 'How can EU legislation tackle microplastic pollution - Position Paper'. Rethink Plastic. Retrieved March 25, 2024, from https://rethinkplasticalliance.eu/wp-content/uploads/2022/07/RPa-Microplastics-Position-Paper-July-2022.pdf
[173] PlasticSoupFoundation. (2024, March 15). No Plastic In Our Water Or Our Bodies. Plastic Soup Foundation. Retrieved March 25, 2024, from https://www.plasticsoupfoundation.org/
[174] RAC-SPA. (n.d.). Regional Activity Centre for Specially Protected Areas. Retrieved March 25, 2024, from https://www.rac-spa.org/
[175] Plan Bleu. (n.d.). Who we are—Plan-bleu: Environnement et développement en Méditerranée. Retrieved March 25, 2024, from https://planbleu.org/en/who-we-are/
[176] MedWaves. (n.d.). About US. MedWaves. Retrieved March 25, 2024, from https://www.medwaves-centre.org/who-we-are/about-us/

the substances that are toxic, persistent, and liable to bioaccumulate listed in annex I." In this context, Parties shall elaborate and implement, individually or jointly, as appropriate, national and regional action plans and programmes, containing measures and timetables for their implementation.[177]

Marine litter (please refer to Annex I-C of the LBS Protocol)[178] is considered one of the categories of substances and sources of pollution that serve as guidance in the preparation of action plans, programmes, and measures. In addition, the Agriculture sector is one of the sectors of activity that are considered when setting priorities for the preparation of action plans, programmes and measures for the elimination of pollution from land-based sources and activities (please refer to Annex I-A of the LBS Protocol).[179]

In line with the above, UNEP/MAP – MED POL developed a regional plan for the management of the agriculture sector, which was adopted by Decision IG26/6 (COP 23, Slovenia). This regional plan addresses plastic wastes coming from "Irrigation water runoff".[180]

The main regional representative for the private sector in the Mediterranean is BusinessMed, who are also involved in the BlueMed lighthouse project.[181]

Civil society are predominantly represented through the Mediterranean Information Office for Environment, Culture, and Sustainable Development (MIO-ECSDE) which acts as a technical and political platform for the intervention of NGOs in the Mediterranean scene.[182] This platform works on a variety of topics, with marine litter and the circular economy central issues that they tackle. The WWF Mediterranean are also key civil society organisation working on the impact of microplastics on the marine environment. They produced a widely cited report on the state of marine plastic pollution in 2018, which reiterates the issue of agricultural plastics, specifically for Spain.[183]

Discourses

EU MLMGA

The integration of microplastics into the plastics pollution debate has seen the inclusion of public health and toxicity concerns pushed forward by civil society and citizens.[184] The solutions put forward by the European Green Deal, to eliminate pollution, including microplastic pollution, have shifted away from prioritising recycling of plastics as seen in the

[177] UNEP/MAP. (n.d.). LBS Protocol and Amendments | UNEPMAP. Retrieved April 16, 2024, from https://www.unep.org/unepmap/who-we-are/contracting-parties/lbs-protocol-and-amendments
[178] UNEP/MAP. (n.d.).
[179] UNEP/MAP. (n.d.).
[180] UNEP/MAP. (2024). 23rd Meeting of the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and its Protocols. Retrieved April 16, 2024, from https://wedocs.unep.org/xmlui/handle/20.500.11822/44627
[181] BusinessMed. (n.d.). BUSINESSMED (Union Méditerranéenne des confédérations d'Entreprises) RSS. Retrieved March 25, 2024, from https://www.businessmed-umce.org/
[182] MIO-ECSDE. (n.d.). What we do | MIO-ECSDE. Retrieved March 25, 2024, from https://mio-ecsde.org/what-we-do/
[183] WWF. 2018. 'Out of the Plastic Trap'. Retrieved March 25th from https://wwf.panda.org/wwf_news/?328836/out-of-the-plastic-trap
[184] EIB, E. I. B. (2023). Microplastics and Micropollutants in Water: Contaminants of Emerging Concern. European Investment Bank. Retrieved March 25, 2024, from https://www.eib.org/en/publications/20230042-microplastics-and-micropollutants-in-water

Plastics Strategy, and place a greater emphasis on reduction and reuse prior to recycling. However, it is unclear how this applies to agriplastics which are still mainly regulated under EPR and recyclability schemes.[185]

Industry state that plastics are essential to maintaining productive and sustainable agriculture.[186] Thus, in the field of agriplastics, industry are focused on recycling and national collection schemes to reduce waste generation downstream. This is in line with current EU governance approaches.

Civil society are primarily engaged with reduction and reuse for plastics overall, consistent with the EGD's approach.[187] However, it is unclear how this applies in the field of agriplastics.

Discourse in this area are thus underdeveloped with respect to EGD initiatives. The current discourses within the EU and civil society concerning microplastics are primarily focused on intentionally-added microplastics and single-use plastics within the meaning of the SUP Directive. These anchors in discourse to focus on microplastic pollution by source may be generating silos and deprioritising other sources of microplastic pollution not prioritised within the Plastics Strategy and subsequent EDG actions plans.

It is unclear how EGD discourses around sustainable product design to reduce microplastic toxicity for agriplastics has impacted this sector. Moreover, the link between agriplastics and marine plastic pollution does not yet appear to be present within regional level discourse.

UNEP/MAP MLMGA

Within the UNEP/MAP, the discourse is currently shifting towards the inclusion of microplastics as a key source of pollution. The framing of the issue is consistent with EU discourse, in that it focuses on the promotion of circularity through sustainable product design to reduce toxicity, and the establishment of EPR as the key mechanisms to reduce waste generation, and subsequently, microplastic pollution.

Agriplastics are currently not a key discourse within the UNEP/MAP system. The Secretariat (including the Coordination Unit and RACs) support the contracting parties of the Barcelona Convention to implement a programme of work that support the implementation of the Barcelona Convention's protocols. It's important to note that the Contracting Parties define every two years some priorities to be tackle at the regional level (Mediterranean basin) as a common threat for all the 21 contracting parties. Most of the time, EU concerns are streamlined with the entire Mediterranean basin ones. Considering that agriplastics are becoming a more and more significant threat, they should be soon considered as a key discourse.

[185] EIP-AGRI, T. (2021, February 5). EIP-AGRI Focus Group Plastic footprint: Final report. EIP-AGRI - European Commission. Text, . Retrieved March 25, 2024, from https://ec.europa.eu/eip/agriculture/en/publications/eip-agri-focus-group-plastic-footprint-final

[186] APE. (2021, July 9). Printing of the European Plasticulture Strategy. APE Europe. Retrieved March 25, 2024, from https://apeeurope.eu/2021/07/09/printing-of-the-european-plasticulture-strategy/

[187] RethinkPlastic. 2022 'How can EU legislation tackle microplastic pollution - Position Paper'. Rethink Plastic. Retrieved March 25, 2024, from https://rethinkplasticalliance.eu/wp-content/uploads/2022/07/RPa-Microplastics-Position-Paper-July-2022.pdf

Power resources

EU MLMGA

The Commission is the decision-making body that is setting the agenda to tackle marine microplastic pollution, including from agricultural sources. Agribusiness interest groups including Plastics Europe and COPA-COGECA have been noted to be prominent in lobbying against particular measures targeting EPR and packaging plastics.[188],[189] These reports also link agribusiness lobbying directly with particular MEPs.

Civil society on the other hand largely employ the power of public awareness and pressure, which is noted as key drivers towards more sustainable policy.[190]

UNEP/MAP MLMGA

Given that this governance arrangement is still in development, the power resources utilised by actors specifically for microplastics are unclear.

7.3.2 How the EGD influences the dynamics within the MLMGA for agricultural sources of marine microplastic pollution within the European Mediterranean

The EGD's objective to reduce pollution and to tackle it at source has produced a shift in the governance approach to microplastics (see Figure 14). As an underdeveloped field of governance, the influence on the EGD in how this field develops is paramount. As such, present governance for microplastics are organised by source as laid out in the Plastics Strategy and reiterated in the EGD. In the case of agriplastics, this has meant that, as a current non-priority source, policy solutions do not match the most current discourses occurring in other plastic related policy domains. This is particularly poignant where industry solutions to promote sustainability in agriplastics are focused on recycling, whereas civil society solutions are primarily focused on reduce, and where necessary, reuse. Given that current EU governance approaches continue to focus on voluntary EPR to manage agriplastic waste, it remains to be seen how the overarching goals within the Zero Pollution and New Circular Economy Action Plans will influence this field. The EGD's influence is also present within the UNEP/MAP's most recent iterations of the regional plan with microplastics, and agriplastics, receiving policy attention in more recent years consistent with the EGD.

[188] C.E.O., (2018). Plastic pressure | Corporate Europe Observatory. Retrieved March 25, 2024, from https://corporateeurope.org/en/power-lobbies/2018/11/plastic-pressure

[189] Sherrington, D. D. L. and R. (2021, December 9). Mapped: The Network of Powerful Agribusiness Groups Lobbying to Water Down the EU's Sustainable Farming Targets. DeSmog. Retrieved March 25, 2024, from https://www.desmog.com/2021/12/09/network-agribusiness-chemicals-pesticides-lobbying-eu-sustainable-climate-farming/

[190] RethinkPlastic. 2022 'How can EU legislation tackle microplastic pollution - Position Paper'. Rethink Plastic. Retrieved March 25, 2024, from https://rethinkplasticalliance.eu/wp-content/uploads/2022/07/RPa-Microplastics-Position-Paper-July-2022.pdf

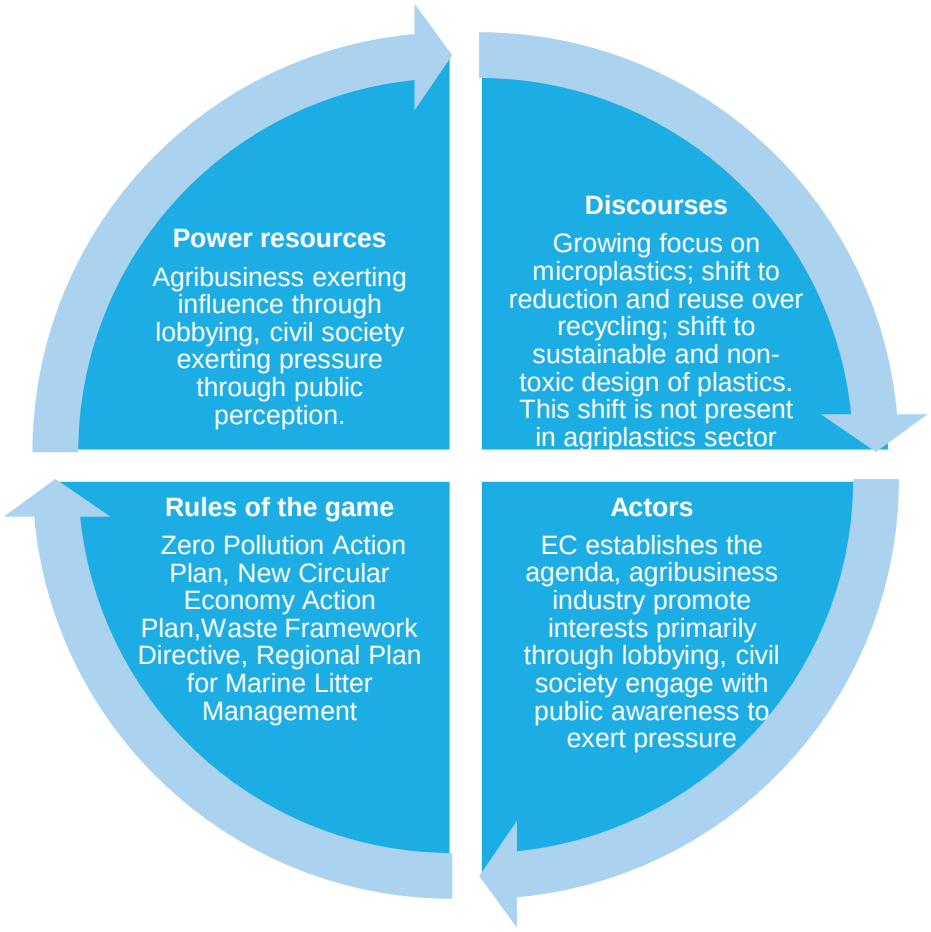

FIGURE 14 NEW DYNAMICS IN THE MLMGAS FOR MICROPLASTICS IN THE EUROPEAN MEDITERRANEAN

7.3.3 Drivers and challenges

Overall, the EGD's push to reduce microplastics in the marine environment is seeing a concerted push to tackle this key source of pollution on multiple fronts. However, as the Plastics Strategy set the agenda for microplastic pollution by source, focus from the EU and civil society have been directed towards the 'low hanging' fruit of intentionally-added microplastics and plastic pellets. This has resulted in the field of agriplastics presenting a potential disconnect from the overall EGD objectives to reduce and reuse overall plastics use where agriplastic management is primarily focused on recycling and end-of-life solutions. With the EGD's goal to reduce microplastic pollution entry into the environment by 30% by 2030 and zero pollution ambition by 2050, this siloed approach to microplastics may present a key challenge to cohesive governance in this field.

Moreover, in the UNEP/MAP, riparian Mediterranean countries are very diverse in terms of socio-economic characteristics. Some of them are EU member states (11/21) and others non-EU (10/21). In terms of harmonisation of public policies addressing Mediterranean challenges, UNEP/MAP plays a pivotal role in bridging these gaps. Today, within the framework of implementing the EGD, UNEP/MAP seeks to contribute to the various challenges that are

characteristic of the basin by translating EGD goals and approaches at the regional level to make them more contextually-appropriate to each country.

7.4 Conclusions regime complex Marine Plastics

The regime complex for marine plastics is relatively new and is characterized by an evolving landscape, driven by the emergence of new MLMGAs that are developing rapidly to address the wicked problem of marine plastic pollution. This synthesis captures the dynamic interplay of these elements, shaped significantly by ongoing regulatory advancements and the frameworks provided by the EGD.

The EGD
The EGD has been pivotal in introducing new regulations aimed at mitigating various sources of marine plastic pollution. Notably, significant updates have been made in the regulation of fisheries gear, though progress in the agricultural sector (agri-plastics) appear to still be made, highlighting the need for policies that include all sources of marine plastics.

Discourses on Producer Responsibility
There is a growing discourse around enhancing producer responsibility and preventing pollution at the source, which has influenced the realm of ALDFG. However, these discourses have yet to fully reach the domain of agri-plastics, where much-needed attention to prevention and leakage into marine environments is still developing. Strengthening these discussions will contribute to enhancing sustainability and implementing responsible production practices across all sectors.

Role of Regional Sea Conventions
RSCs play an important role in the marine plastics regime complex, acting as key coordinators at multiple governance levels. The disparity in how these conventions operate between regions, such as the Baltic Sea and the Mediterranean Sea, illustrates the varied approaches to policy implementation and monitoring. These conventions ensure that regional actions are aligned with global and European directives facilitating effective monitoring and compliance.

Drivers of attention and momentum
The momentum from global treaty negotiations mobilizes international cooperation and commitment. This collective effort supports EGD objectives by harmonizing actions and policies on a global scale, essential for addressing transboundary issues like marine plastics.

Difficulties in changing narrative and regulations
The prevalent industry focus on solutions, such as recycling, poses substantial challenges in shifting the narrative towards more preventive strategies, essential for addressing the root causes of marine plastic pollution for both microplastics and ALDFG. Furthermore, achieving policy coherence remains a challenge, worsened by the many regulations being developed by various governance institutions. These regulations, which target different aspects of the plastic lifecycle and various pollution sources, sometimes result in overlapping or conflicting governance actions, especially in emerging areas like agri-plastics.

Urgency in speeding up progress

A significant challenge within this regime complex is the pace at which measures are created and implemented. The urgent need to reduce pollution due to its associated toxicity demands fast action, yet the EU governance frameworks are still in the early stages of developing mandatory regulations that can effectively address these issues.

8 Conclusions

Regime complexes are understood as the institutional setting of the collection of different Multi-Layered Marine Governance Arrangements (MLMGA) which are associated with European Green Deal target areas, such as Maritime Transport, Marine Life, Marine Energy and Marine Plastics. As explained in the theoretical approach, a MLMGA is the temporary stabilization of the content and the organization of a particular policy domain. In this report (D2.2), we have provided an overview of the MLMGAs for each of the 9 PERMAGOV cases. We also analysed for each of the respective MLMGAs how the EGD is - through specific EU policies - changing the multi-level marine governance arrangements key actors, rules and institutions, discourses, power resources and relations that govern Maritime Transport, Marine Energy, Marine Life and Marine Plastics. Finally, we identified challenges and drivers within and between these arrangements that hinder or enable the successful implementation of EU policies that aim to achieve EGD objectives. This task was performed to support the implementation of the EGD by understanding which changes are necessary or foreseeable as a result of the introduction of EGD targets and policies.

In the **Maritime Transport** regime complex, two MLMGAs have been analysed: 'decarbonising shipping' and 'Motorways of the Sea'. An important driver of change in the Maritime Transport regime complex is the discursive shift from energy efficiency to decarbonising shipping, resulting in rules to achieve decarbonization targets for both ports and ships. In addition, to stimulate the move from road/rail to sea new rules are developed to stimulate short sea shipping with smaller vessels. Important challenges within the Maritime Transport regime complex are the costs for technological innovations of decarbonising shipping, the lack of predictability of rules, which reduces the willingness to invest in renewable energy for shipping and by ports, and a lack of clarity in rules in terms of requirements and possibilities to comply.

In the **Marine Life** regime complex the following MLMGAs have been analysed 'seabed integrity in the Baltic Sea' (consisting of the governance arrangements for dredging and bottom trawling) and 'Sustainable fisheries in Italian MPAs'. The introduction of the EGD (mainly the Biodiversity Strategy) in the regime complex Marine Life resulted in a more ecosystem-focussed, holistic narrative. The EGD strengthened the existing ecosystem-based approach in fisheries management and also depicts the integrity of seabed as a foundation of the marine ecosystem. The biodiversity discourse and the EGD ambitions can be seen as the driver of change in the MLMGAs in the Marine Life regime complex, however, it is unclear yet how this discourse will be translated into rules and available resources. There is a tension between the EGD/biodiversity discourse and the sectoral/industry discourses, and between the different rules systems within the MLMGAs around biodiversity/conservation and around regulating human activities/industry. A key concern within Marine Life is the integration and coherence between policies and governance levels. For example the biodiversity strategy and the Farm2Fork strategy are not fully aligned. On the one hand, it is uncertain how biodiversity is integrated in Farm2Fork, while on the other it is unclear how livelihoods and food security issues are integrated in the biodiversity strategy.

The regime complex **Marine Energy** consists of three MLMGAs: 'Floating Wind in the Celtic Sea', 'Energy islands in Denmark' and 'Offshore Wind in Norway'. Main drivers of change in the Marine Energy regime complex are the discourses of energy security, repowering,

acceleration, the development of an integrated energy system and transboundary cooperation. These discourses changed the MLMGAs in Marine Energy in different ways. The energy security discourse, intensified due to the war in Ukraine, resulted in new rules such as REPowerEU plan, while integrated energy system and transboundary collaboration discourses in the Danish and Celtic cases empowered new coalitions on sea-basin level. Several challenges impede progress in the Marine Energy regime complex. Firstly, there are timing disparities between EU ambitions and Member States' specific regulatory and contextual issues. While the EU seeks acceleration under the EGD, lengthy and complex consenting, licensing and tendering processes persist in many Member States, which leads to long lead times and uncertainty for renewable energy projects. Secondly, time is required to develop necessary technologies and infrastructure, including port facilities for the deployment of offshore wind parks, hydrogen infrastructures, and so forth. Thirdly, grid capacity limitations and storage constraints hinder acceleration, despite discourses that suggest that technological challenges can be overcome with adequate resources. Fourthly, costs, and the pre-commercial status of some technologies e.g. floating wind, poses a major challenge for investment. Finally, the discourse around acceleration diverts attention away from biodiversity protection and sustainability concerns, raising questions about how rapid offshore energy development can be compatible with biodiversity targets e.g. 30x30 agenda, as well as co-existence with fisheries and other marine interests.

For the **Marine Plastics** regime complex the following MLMGAs have been analysed: 'Marine litter from fishing gear in the Baltic Sea' and 'Microplastic pollution of the Mediterranean Sea'. The EGD introduced new rules for the regime complex Marine Plastics aimed at mitigating various sources of marine plastic pollution, such as the regulation of fisheries gear. Also discourses on producer responsibility and preventing pollution at the source are emerging in the Marine Plastics regime complex, but these discourses have to be strengthened to affect for example the domain of agri-plastics. In general, the plastic industry focuses on solutions, such as recycling, posing substantial challenge to change the discourse to preventive strategies. Specific for Marine Plastics is the important role Regional Sea Conventions play as key coordinators at multiple governance levels. Achieving policy coherence in the Marine Plastics regime complex is a challenge. Regulations (developed by different governance institutions) targeting different aspects of the plastic lifecycle and various pollution sources result in overlapping or conflicting governance actions. The Marine Plastics regime complex is facing an urgent need to reduce pollution due to its associated toxicity demanding fast action, while the EU governance frameworks are still in the early stages of developing mandatory regulations.

This deliverable shows that regime complexes do not develop in a vacuum; they all develop within the EU marine governance institutional setting and are all affected by the European Green Deal policy instated by the EU. Therefore, developments within one regime complex influences the developments in other regime complexes. Although it is beyond the remit of this Deliverable to establish conclusions on how these arrangements can be improved, some linkages can be found between all of them. Indeed, the arrangements analysed within the framework of regime complexes demonstrate their interconnectedness and interdependence, particularly in supporting the *objectives* of the EGD. Understanding these linkages is crucial for effective policy development and implementation to address complex marine challenges. Key drivers and challenges that relate to these interlinkages and which will likely support the implementation of the EGD are:

- **Policy Integration and Synergies**: While each regime complex focuses on specific target areas such as Maritime Transport, Marine Life, Marine Energy, and Marine Plastics, there are inherent overlaps and synergies between them. For instance, the transition to decarbonize shipping (Maritime Transport) directly contributes to reducing carbon emissions, thereby aligning with broader environmental goals outlined in the Marine Life and Marine Energy regime complexes. Reducing marine plastic pollution will also improve MPA management as part of Marine Life regime complex.
- **Ecosystem and prevention pollution at source approaches**: The introduction of the EGD has catalysed a shift towards an ecosystem-focused approach within various regime complexes. For example, the emphasis on seabed integrity and sustainable fisheries (Marine Life) acknowledges the interconnectedness between biodiversity conservation and human activities. Prevention at source is aimed for, not only when it comes to protecting seabed integrity but also Marine Plastics. Such ecosystem-centric perspectives resonates across different MLMGAs, reinforcing the need for holistic and preventive management strategies.
- **Resource Interdependencies**: Several MLMGAs within different regime complexes share common resources and face similar challenges. For instance, the development of offshore wind energy (Marine Energy) requires consideration of environmental impacts and potential conflicts with fisheries (Marine Life). Similarly, addressing marine plastic pollution (Marine Plastics) involves regulating activities such as fishing, which intersects with the Maritime Transport regime complex.
- **Cross-Sectoral Collaboration**: Achieving the objectives of the EGD necessitates collaboration across sectors and stakeholders. Regime complexes serve as platforms for such collaboration, facilitating dialogue and coordination between actors with diverse interests and expertise. For instance, integrating biodiversity considerations into fisheries management (Marine Life) requires collaboration between environmental agencies, fisheries authorities, and industry stakeholders.
- **Governance Coherence and Alignment**: Challenges related to governance coherence and alignment emerge across regime complexes. Ensuring consistency and synergy between policies and governance levels is essential for effective implementation. For instance, aligning the objectives of the biodiversity strategy with other sectoral strategies such as the Farm2Fork strategy (Marine Life) requires careful coordination and integration of priorities.
- **Regulatory Frameworks and Compliance**: The introduction of new rules and regulations within one regime complex often has implications for others. For example, regulations aimed at mitigating marine plastic pollution (Marine Plastics) may impact shipping activities (Maritime Transport) or offshore energy development (Marine Energy). Understanding these interdependencies is crucial for anticipating regulatory effects and ensuring compliance.

To conclude, regime complexes do not exist in isolation but operate within the broader context of EU marine governance and are all influenced by the imperatives of the EGD. Therefore, advancements within one regime complex have repercussions across others. Specifically, the analyses of the different regime complexes reveal intricate linkages. For instance, the development of marine energy infrastructure in Norway and Denmark necessitates port and vessel infrastructure, impacting both Maritime Transport and Marine Life regimes. Moreover, decisions regarding the selection of sites for offshore wind parks and energy islands within

Marine Energy directly affect marine biodiversity, illustrating the interconnectedness of marine governance arrangements. These findings underscore the importance of considering cross-cutting issues and coordinating efforts across regime complexes to achieve the overarching goals of sustainability and environmental protection within the EU marine context. Further development of these preliminary conclusions on linkages between regime complexes can be found in future PERMAGOV deliverables.