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The influence of maritime spatial planning on the development of marine renewable energies in Portugal and Spain: legal challenges and opportunities

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Abstract:

The objective of this study is to analyse, from a legal point of view, the influence of the transposition of Marine Spatial Planning Directive into both Spanish and Portuguese domestic laws on the development of marine renewable energies in both countries. This article concludes that the Portuguese legal system is more favourable for the development of marine renewable energies than the Spanish legal regime, since the former establishes a more flexible planning system, sets criteria for the prioritisation of marine uses, incorporates trade-off mechanisms, introduces an electronic single-window system and regulates a pilot zone. These measures can help streamline licensing processes, avoid and resolve conflicts with other sea users, and adapt planning instruments to the rapid development of new marine renewable technologies. However, both legal regimes lack specific

Abbreviations: MSPD: Maritime Spatial Planning Directive 2014/89/EU. MSPs: Maritime Spatial Plans. LBOGEM: Law 17/2014, 10 April. GDNRSMS: General Directorate of Natural Resources, Security and Maritime Services. GES: Good Environmental Status. MSFD: Marine Strategy Framework Directive 2008/56/EC. EBM: ecosystem-based-management. REN: National Electricity Network. GDEG: General Directorate of Energy and Geology.

legal mechanisms aimed at offering effective protection of the marine environment against negative effects arising from the installation of such devices. Similarly, there is a lack of coordination between maritime spatial planning instruments and land planning instruments, and between the Central Government and the autonomous regions. This may hinder the installation of marine renewable energies. This study has implications in relation to the EU integrated marine policy aimed at achieving a balance between blue growth and the conservation of the marine environment, as well as an inter-administrative coordination improvement in decision-making.

Keywords:

Marine renewable energies, maritime spatial planning directive, Spanish law, Portuguese law, good environmental status, autonomous regions.

1. Introduction:

As indicated by Heffron and Talus (2016a), the energy sector plays an important role in the employment and economic development of a country, as well as in the personal health of its citizens. For years, the focus of energy policy has been on the economic aspect—low costs and efficient outcomes—which has led to a continuous dependence on fossil fuels in the short term, while the construction of low-carbon energy infrastructures has been a secondary political concern (Heffron and McCauley, 2017). However, society is currently experiencing a process of decarbonization in which both energy law and policy must go further and play key roles in achieving a just and equitable transition (McCauley and Heffron, 2018 -this issue-): that is, achieving the necessary balance between the

economic, political, and environmental aspects (the 'energy trilemma') in decision-making, in order achieve energy justice in practice (Heffron and Talus, 2016a; Heffron and McCauley, 2017; McCauley and Heffron, 2018 -this issue-). In this sense, several authors (e.g. Heffron et al., 2018) advocate a paradigm shift in the concept of energy law, proposing a set of core principles that include energy justice and protection of the environment.

Marine renewable energies[1] can play an important role in achieving international, EU, and national commitments in line with energy transition and in the fight against climate change. In this connection, these low-carbon energies can help achieve the Paris Agreement's goal (COP 21) of maintaining the increase in global average temperature to well below 2 ºC above pre-industrial levels. Moreover, the implementation of marine renewable energies can help enhance the desired objective of Universal Energy Access (Abad, 2014), which is an essential component of a just and equitable transition (IRENA, 2018) and is in line with Goal 7 of the United Nations 2030 Agenda for Sustainable Development—that is, 'to ensure access to affordable, reliable, sustainable and modern energy for all'.

Furthermore, as highlighted by Cudennec (2016), the implementation of these marine energies can help reach the targets set in the 2030 Climate and Energy Policy Framework adopted by the European Union on 23 October 2014, which include reducing greenhouse gas emissions by 40% compared to pre-industrial levels, achieving a 27% energy consumption of renewable energies, and

[1] This concept covers offshore wind and ocean energy (wave energy, tidal energy, salinity gradient energy and ocean thermal energy conversion).

improving energy efficiency by 27%. In addition, the European Commission (2014; 2008) and legal literature (e.g. Abad, 2014; Cudennec, 2016) have highlighted the relevant role of marine renewable energies in economic growth, job creation, and energy diversification, reducing Europe's energy dependence on fossil fuel imports and increasing energy security.

Despite these many advantages, the implementation of marine renewable energies is below its potential in many countries. In this sense, several legal aspects have been identified among the main obstacles to the development of the marine renewable energy sector, together with economic, technological, and environmental issues, by the European Commission (2014; 2011), as well as other legal and scientific literature (e.g. Leary and Esteban, 2009; Long, 2014; Wright et al., 2016; Young, 2015). In particular, long and complex authorisation procedures with poor inter-administrative coordination, threats to the protection of both, biodiversity and the marine environment, and clashes with other sea users have been highlighted as the main obstacles.

Directive 2014/89/EU on Maritime Spatial Planning (MSPD) obliges EU member states to establish maritime spatial plans (MSP) that set a time-space distribution of potential and future uses in their respective marine waters before 31 March 2021 (Articles 8.1 and 15.3 of MSPD). It also offers an opportunity to solve many of the aforementioned obstacles. In this sense, MSPD can help streamline licensing procedures for the installation of marine renewable energies, increase security and certainty among investors, avoid and reduce conflicts with the marine environment and other activities that converge in the sea, and provide a basis for improving the coordination between autonomous regions and the

Central Government, especially in relation to the installation of marine renewable energies in decentralised political systems.

However, given the harmonising nature of MSPD, it is drafted in very general terms. It leaves it to the member states to develop specific measures necessary as part of their internal laws, in order to achieve the objectives of MSPD.

Therefore, an analysis of the effects of national maritime spatial planning legislations on the development of marine renewable energies can be useful to identify two things. First, it can help identify all those suitable mechanisms aimed at facilitating their implementation. Second, it can bring to light all those factors that are holding their expansion back, as well as measures that are aimed at achieving better inter-administrative and maritime-terrestrial coordination, and at protecting the marine environment against the negative effects of these facilities. This research is focused on Spain and Portugal, given the abundance of marine energy resources available and not yet fully exploited in both countries, and their geographical proximity. In this sense, the Portuguese Renewable Energy Plan 2013-2020 foresees the installation of 6 MW of wave energy and 27 MW of offshore wind energy for the year 2020. The Spanish Renewable Energy Plan 2011-2020 pursues the objective of achieving 750 MW of offshore wind energy and 100 MW of hydrokinetic, wave, and tidal energy by 2020.

As highlighted by Wright et al., (2016) there is a lack of scientific papers that address legal and regulatory aspects related to the development of marine renewable energies, despite their importance.

Some prior scientific studies have conducted legal research, both individual and comparative, on licensing processes for the installation of marine renewable

energies in different countries[2], highlighting the importance of achieving a better coordination between licensing authorities, streamlining consenting procedures, removing bureaucratic barriers, and establishing a single window system to facilitate the development of such devices (e.g. Gibson and Howsam, 2010; Leary and Esteban, 2009; Le Lièvre and O'Hagan, 2015; Salvador et al., 2018; Simas et al., 2015; Portman et al., 2009; Wright, 2014).

As highlighted in Heffron and Talus (2016a), it is important to legislate incentives and subsidies to attract private investors in new renewable energy projects. In this connection, several authors (e.g. Fitch-Roy, 2016; Mani and Dhingra, 2013; Portman, 2010; Snyder and Kaiser, 2009; Söderholm and Pettersson, 2011; Vazquez et al, 2015) have conducted comparative legal studies on different financial structures and supporting policies along with the consenting processes of different domestic frameworks, highlighting the relevant role of several support mechanisms (e.g. free-grid connections, tax incentives, feed-in-tariff and feed-in-premium policies, and quota systems) in the implementation of marine renewable energies.

With regard to the management of marine *energy* resources[3], which is the central object of this research work, although there are many legal and political articles

[2] In Spanish legal literature, a detailed analysis of Spanish licensing process on Marine Renewable Energies has been conducted by Alenza (2009), Soro (2011) and López (2008). In Portuguese legal literature, Sousa (2016) conducted a legal analysis of licensing process on Marine Renewable Energies in Portugal.

[3] This paper is framed within the field of governance of both energy resources and marine space, and studies the application of legal frameworks in marine spatial planning to the development of marine renewable energy resources. It also covers aspects of both energy law —working towards

focused on marine spatial planning under the international Law of the Sea (e.g. Maes, 2008), the MSPD and its transposition into the national law of member states' legal domestic frameworks[4] (e.g. Becker-Weinberg, 2015; Calado, 2015; Frazão et al., 2015; Krämer, 2018; Sanz, 2018), and other national initiatives on MSP (Calado et al., 2010, Drankier, 2012; Jay et al., 2014), few of these papers are focused specifically on the influence of these MSP frameworks on the development of marine renewable energies. Several scholars have conducted legal studies on the effects of the international Law of the Sea (e.g. Abad, 2014, Schmitz, 2013, Scovazzi and Tani, 2014) and MSP legal frameworks (e.g. Long, 2014; O´Hagan, 2015; Young, 2015) on the development of marine renewable energies. However, none of them have conducted a specific legal analysis focusing on the effects of maritime spatial planning domestic frameworks on the development of marine renewable energies in Spain and Portugal nor have

simplified and stable authorisation and licensing systems aimed at facilitating the development of marine renewable energies— and environmental law —the sustainable development of marine renewable facilities, and the clashes over the protection of the marine environment. As noted by Heffron and Talus (2016b), Energy law is not an autonomous concept, but is closely related with other branch of law and specially with climate and environmental law, with which it interacts.

[4] The EU has co-funded a project called "Transboundary Planning in the European Atlantic" (focused on two pilot areas: Algarve-Gulf of Cadiz and East Coast-Irish sea) whose outcomes was shown in a Good Practice Guide elaborated by Almodovar et al., (2014) in which an analysis of governance frameworks and legal instruments in Ireland, the UK, Portugal and Spain was conducted. Moreover, there is an EU-funded Project ongoing entitled "Supporting Implementation of Maritime Spatial Planning in the Northern European Atlantic" (SIMNORAT) aimed at supporting the implementation of the Directive on Maritime Spatial Planning in French, Spanish and Portuguese marine waters.

carried out a comparison between both systems, and that is precisely the aim of this research paper, in line with the legal research agenda for ocean energy published by Wright et al., (2016), which pointed out that 'further study is required on the interaction of ocean energy with MSP processes, approaches to prioritisation of activities, the possibilities for coexistence, and the balance between industrialisation and sustainability'. Likewise, this study is in line with Kerr et al., (2014), which highlighted the need of conducting comparative studies on marine renewable energies.

The paper begins in Section 3, by conducting a study on the influence of maritime spatial planning on streamlining the licensing process for the implementation of marine renewable energies in Portugal and Spain. Section 4 contains an analysis of the role of maritime spatial planning on resolving conflicts between the renewable energy industry and other marine users. Limitations of Portuguese and Spanish maritime spatial planning systems in addressing negative effects caused by marine renewable energies on the marine environment are shown in Section 5. Challenges on achieving coordination between land and sea planning and between autonomous regions and central governments in both, planning and licensing processes, are detailed in Section 6. Finally, key conclusions and policy implications of results obtained are described in Section 7.

2. Methodology:

This comparative legal research aims to identify the main opportunities and challenges in marine renewable energies development arising from Portuguese and Spanish legislation on marine spatial planning. This study highlights their strengths and weaknesses and identifies good practices in line with both the research agenda for social studies in marine renewable energy proposed by Kerr

et al. (2014), and the legal research agenda for ocean energy proposed by Wright et al. (2016).

This paper follows the methodological framework proposed by Morán[5] (2002) to carry out a comparative legal study. This approach has been applied in parallel with the four steps that characterized the legal–doctrinal method according to Singhal and Malik[6] (2012):

i) First, after background reading, we identified several legal and factual obstacles that have resulted in a lack of development of marine renewable energies (e.g. a lack of streamlined licensing procedures, conflicts with other sea users, and conflicts over the protection of the marine environment). The comparative study of Spanish and Portuguese legal frameworks on marine spatial planning was selected because of the analogies of both legal systems and the proximity of their marine renewable resources, in addition to its high potential. Legal literature (e.g. Long, 2014; Firestone et al., 2015; Young, 2015) has highlighted the key role that marine spatial planning can play in addressing many of the

[5] This author divides legal comparative methodology in four phases: i) selection of the topic that are the object of the comparative research; ii) study, exam and description of both legal systems; iii) identification of similarities and differences between both legal systems and iv) conclusions.

[6]These authors divide doctrinal legal methodology in four phases: i) unpacking the legal issues that requires further research through background reading; ii) locating and analysing the relevant primary and secondary material with the aim of determining the relevant rules of law that are applicable to identified issues; iii) analysing the facts in terms of the law, that is: marrying the identified issues with applicable rules; iv) conclusion based on facts and law.

aforementioned issues related to marine renewable energies. However, as noted in the Introduction, there is a lack of studies focused specifically on the influence of Spanish and Portuguese maritime spatial planning legal frameworks on the development of marine renewable energies. Thus, the main research question of this paper is: to what extent can new Spanish and Portuguese domestic legal frameworks on marine spatial planning solve many of these identified problems?

ii) Second, we conducted a descriptive study of both domestic legal frameworks in the context of MSPD. In this sense, we consulted the proper sources of the legal doctrinal method, which, according to Vibhute and Aynalem (2009), can be classified into two different categories: primary research tools (EU law—MSPD, MSFD; and Spanish and Portuguese domestic law—constitution, laws, royal decrees) and secondary source materials (legal books, institutional websites, international and national scientific and legal articles). Most of the literature was accessed through Web of Science, Scopus, and Google Scholar, and studies were selected according to their relevance in relation to the aforementioned research goal of this paper in the fields of marine spatial planning, marine renewable energies, and energy law and policy in general.

iii) and iv) We identified relevant similarities and differences, as well as strengths and weakness, among both legal frameworks, in order to extract the main conclusions, discuss their policy implications, and provide several recommendations.

3. Streamlining licensing processes for the implementation of marine renewable energies:

Long and complex licensing processes have been identified as significant barriers to the development of marine renewable energy in many countries (European Commission, 2014; Gibson and Howsam, 2010; Le Lièvre and O'Hagan, 2015; Mani and Dhingra, 2013; Ocean Energy Forum, 2016; Simas et al., 2015; Wright et al., 2016; Young, 2015). Specifically, those procedures regulated by scattered legal norms which involve the issuance of a large number of authorisations by many bodies without putting appropriate mechanisms for coordination between them in place, are identified as major barriers (Young, 2015).

The European Commission (2011), the Ocean Energy Forum (2016), and scientific and legal literature (e.g. Long, 2014; O'Hagan, 2015; Schaefer and Barale, 2011; Wright, 2015; Young 2015) have highlighted the importance of maritime spatial planning in simplifying and streamlining consent processes. Indeed, maritime spatial planning can help organise and integrate different sectoral interests, legal instruments, and authorising bodies under one umbrella (Wright, 2015). In this sense, as noted by Schaefer and Barale (2011), it is essential to achieve both 'vertical coordination' (between different sectors and activities developed in the marine environment) and 'horizontal coordination' (between the different levels of governance).

In addition, important early information on the main environmental effects of marine renewable energies in each area is provided in the planning process. This aims at reducing the existing uncertainty around the potential effects of these facilities on the marine environment, contributing to the consequent streamlining of the subsequent environmental impact assessment (EIA) process, and taking the burden off of the developer in terms of both, collecting a large number of data

and conducting a large number of studies at this stage of the environmental impact assessment, which in turn reduces costs associated with delays in processing the authorisation (European Commission, 2011, 2014; Long, 2014; Portman et al., 2009).

In this regard, MSPD points out that the coordination between maritime spatial planning and authorisation procedures can contribute to the achievement of the EU's objectives for renewable energy (Recital 22 of MSPD), especially those established by Directive 2009/28/EC on the Promotion of the Use of Energy from Renewable Sources. For this reason, it is established that the deadlines for the adoption of MSP should be consistent, whenever possible, with the timetables set by Directive 2009/28/EC (Recital 15 of MSPD).

3.1 Portugal:

Le Lièvre and O'Hagan (2015) and Simas et al. (2015) defined the consent system for the installation of marine renewable energies in Portugal as a fragmented process, where different bodies issue different authorisations, highlighting the need for improving the coordination between them. Thus, several authors have proposed different measures aimed at streamlining Portuguese licensing process, such as the establishment of a single-window system, the provision of guidance that help promoters understand the licensing procedure[7], or the achievement of an integrated approach through maritime spatial planning.

In this sense, Decree-Law n. 38/2015, which transposes MSPD and develops Law 17/2014, 10 April (LBOGEM), establishes several provisions that can be of

[7] In this sense, Jesus et al. (2016) have developed a licensing guide for Marine Renewable Energy Projects in Continental Portugal.

great help in the rationalisation of the consent process for the installation of marine renewable energies, such as:

-Article 2, which introduces an electronic single-window system, and facilitates the processing of approval procedures for the development of activities in the marine environment, such as the exploitation of energy from wind and waves. This system provides greater coordination between the different agencies involved, streamlining of application processes, simplification of the decision-making processes, and a better understanding of the cumulative impacts of human activities at sea (Schaefer and Barale, 2011).

- As proposed at the Ocean Energy Forum (2016), the establishment of domestic legal frameworks that set licensing requirements proportionate to the risk generated by each facility according to its capacity (MW) and the characteristics of the selected location can help the development of marine renewable energies. In this connection, Decree-Law n. 38/2015 (Article 105) excludes from its scope all those activities that are developed in the pilot zone of electric power production of the waves, indicating that they shall continue to be subject to Decree-Law n. 5/2008, of January 8, as amended by the Decree-Law n. 15/2012, of January 23. The special regime applicable to the development of marine renewable energy projects in the testing phase, pre-commercial or commercial (small-scale) in the pilot zone, establishes a licensing procedure that is more simplified and flexible than the general procedure is (explanatory memorandum of Decree-Law n. 5/2008) (see appendix A). This differentiation appears justified by the small-scale of the projects and the lack of interference with protected areas and species identified in the pilot zone.

Regarding the general regime, the LBOGEM (Article 17) and the Decree-Law n. 38/2015 (Article 48) establish that any private use of the marine environment is subject to the obtainment of the private use title, which shall be granted by the General Directorate of Natural Resources, Security, and Maritime Services (GDNRSMS) except in the case of autonomous regions of Azores and Madeira, where the private use title shall be issued by their respective competent bodies (Article 51, Decree-Law n. 38/2015). The LBOGEM (Articles 19 to 21) and the Decree-Law n. 38/2015 (Articles 52 to 57) set three types of private use titles depending on the duration of the activity, namely, a 'concession', for those prolonged and uninterrupted uses exceeding twelve months, such as for example, exploitation of renewable energies for commercial purposes; 'a licence', for those interrupted or seasonal temporary uses; and 'an authorisation', for those pilot projects on non-commercial activities (e.g. testing of marine renewable energies not regulated by Decree-Law 5/2008). The main differences among concessions, licences, and authorisations are their maximum durations (50, 25, and 10 years, respectively) and the tax exemption of those activities which are subject to authorisation (Articles 52.3, 55.2, 57.2, and 57.4 of Decree-Law n. 38/2015). However, this exemption is also extended to the development of energy resources, although they are subject to concession (Articles 52.4 and 76.2 of Decree-Law n. 38/2015). Thus, this differentiation has little practical significance in this respect.

Apart from the 'private use title', other authorisations are required (Article 18 of the LBOGEM and Article 51.3 Decree-Law n. 38/2015) (see Fig. 1). In this sense, Article 62.7 of the Decree-Law n. 38/2015 establishes that the General Directorate of Energy and Geology shall ensure the necessary coordination with

the competent authority for the allocation of the private use certificate (GDNRSMS) and other entities responsible for issuing other consents required for the implementation of marine renewable energies in order to accelerate the processes, especially with respect to compliance with deadlines and the provision of information and clarifications to the interested parties.

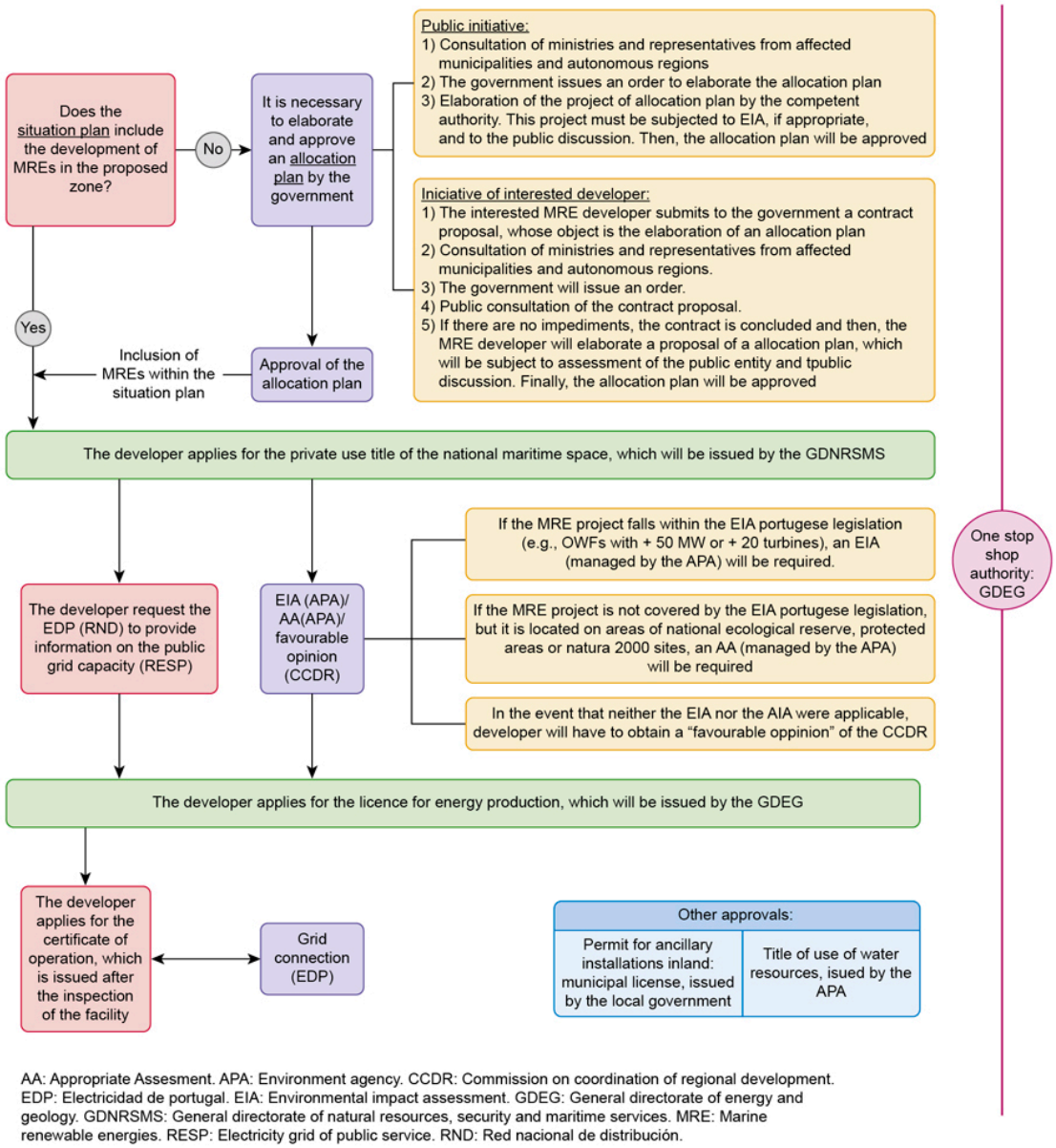

Fig. 1. Licensing process for the implementation of Marine renewable energies in Continental Portugal. (source: prepared by the authors based on: Jesus et al., 2016; Le Lièvre and O'Hagan, 2015; Simas et al., 2015).

Similarly, under a fiscal and economic perspective, Article 52 of the Decree-Law n. 38/2015 facilitates the development of marine renewable energies, both, in the pre-commercial and commercial phases, by exempting them from the payment of the 'private utilisation tax'. However, as Ferreira et al. (2015) pointed out, the extension of this measure to the extraction of geological resources is incomprehensible, since, as the preamble and Article 75 of Decree-Law n. 38/2015 indicates, the purpose of the tax is to offset the environmental costs arising from activities as well as the benefits deriving from the private use and administrative costs of management.

- Both, the LBOGEM (Article 7) and Decree-Law n. 38/2015 (Article 4.1) establish two types of maritime spatial planning instruments, namely, the 'situation plan' and the 'allocation plans'. The 'situation plan' represents and identifies sites of protection and preservation of the marine environment and the distribution of present and potential uses throughout the national maritime space[8], such as the development of marine renewable energies, (Article 7.1.a of the LBOGEM and Articles 9 and 10.1.a.iv of the Decree-Law n. 38/2015), while allocation plans allot unplanned uses to areas of the national maritime space and, once approved, are integrated into the situation plan, which is automatically altered (Articles 7.1.a and 7.3 of the LBOGEM and Article 19 of Decree-Law n. 38/2015). This provision offers a high degree of flexibility in maritime spatial planning, adapting it gradually to the development of the technique, in line with the principle of adaptive

[8] The national maritime space includes the territorial sea, the exclusive economic zone and the continental shelf (article 2 of the LBOGEM). Thus, transitional waters are not included (except in the special case of aquaculture). However, these are also part of the maritime public domain and thus they have to be considered.

management (as enshrined under Article 3.b of the LBOGEM), and, therefore, enabling the implementation of new advances in marine renewable technologies. In this sense, ocean energy is still in its initial stages of development and commercially viable large-scale commercial developments are expected in the future (Ehler, 2015). In fact, it is likely that advancements and improvements in marine renewable technologies and changes of wind and wave patterns over time will make their implementation feasible in new locations. Similarly, there is also the likelihood that new sites will be identified for the combination of different marine renewable technologies with each other, or with other activities (e.g. aquaculture) in the future, through the implementation of multi-use platforms.

3.2 Spain:

Spain has a long and complex authorisation procedure for the installation of marine renewable energies, in which different consent bodies are responsible for issuing different authorisations, being necessary to improve coordination between them (Alenza, 2009; Colmenar-Santos et al., 2016; Le Lièvre and O'Hagan, 2015; Salvador et al., 2018; Sanz, 2014; Vázquez, 2009; Vázquez et al, 2016; Simas et al, 2015; Soro, 2011; López, 2008) (see Fig. 2).

The Royal Decree 363/2017 of April 8, which transposes MSPD into Spanish domestic law, does not contemplate specific provisions aimed at streamlining the licensing procedure[9]. Unlike Portugal, Spain neither sets a sufficiently flexible

[9] The licensing process of marine renewable energies is mainly regulated by Royal Decree 1028/2007 of July 20 and Royal Decree 1955/2000 of December 1. Similarly, the Coastal Law 22/1988 of July 28 and the Environmental Assessment Law 21/2013 of December 9 are

maritime spatial planning system (see subsection 4.2), nor establishes an electronic one-stop-shop system, nor has selected a pilot area for which specific regulations have been established with the aim of fostering the development of marine renewable energy projects in the pre-commercial or test phases. However, Royal Decree 1028/2007 of July 20 regulates a simplified licensing procedure which is applied to both, offshore wind farms with an installed capacity of less than 50 MW, and to the rest of marine renewable energies (e.g. wave and tidal energies) regardless of their installed capacities. The main difference with respect to the ordinary procedure is that the pre-application phase (which includes the subphases of area characterisation, public tender, and zone reservation) is deleted (Article 32 of Royal Decree 1028/2007) (see Fig. 2). Similarly, several marine renewable energy projects (those that are not offshore wind farms, such as wave plants, as well as offshore wind projects with an installed capacity of less than 30 MW, which are composed of less than 50 turbines and that are located more than 2 km away from other devices) are subject to a 'simplified EIA'[10] by the Environmental Assessment Law 21/2013 (Annex I.3.i).

applicable. For more information about the licensing process for the installation of marine renewable energies in Spain see Salvador et al., (2018)

[10] The main differences between the 'Ordinary' and the 'simplified' environmental impact assessment are the maximum legal timeframes of the evaluation process (6 months and 3 months, respectively) and the omission of several phases (e.g. the preparatory –scoping- phase) on the simplified assessment.

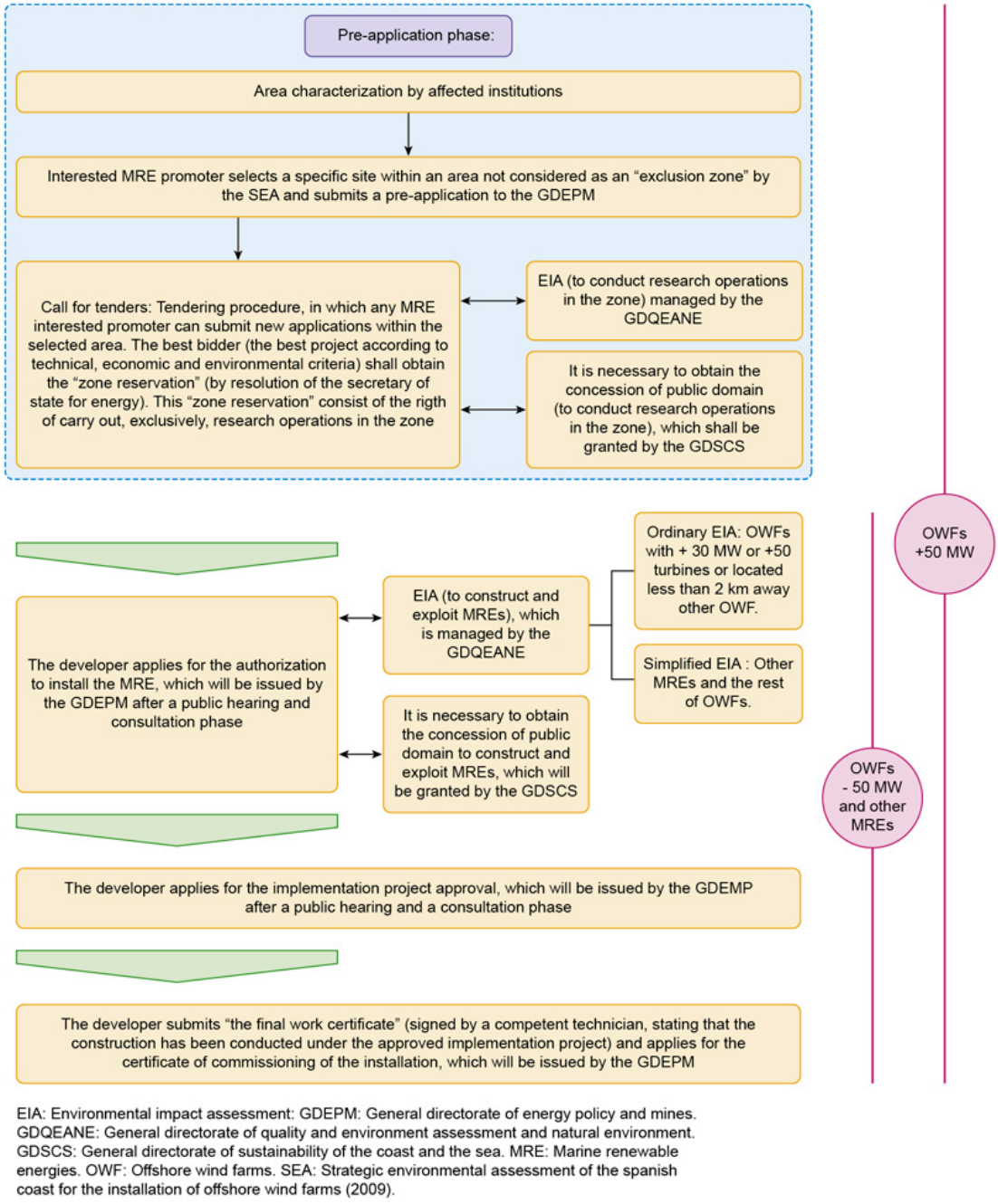

Fig. 2: Licensing process for the implementation of marine renewable energies in Spain.

4. Managing clashes with other activities:

Unlike the 'single-sector management' conducted in the past, maritime spatial planning enables a holistic management of all the activities undertaken at sea, identifying and addressing their potential cumulative effects, as well as avoiding and resolving clashes between the different users of the marine environment

(Douvere and Ehler, 2007, 2009; Ehler, 2015; O´Hagan, 2015). In the field of marine renewable energies, this means an accurate identification of those locations where there are neither conflicts with other activities nor serious threats to biodiversity and the marine environment, providing greater certainty and confidence to developers and investors.

Legal and scientific literature (e.g. Toke, 2011; Wright, 2015; Young, 2015) have identified two different systems of marine spatial planning implemented by states in relation to marine renewable energies. One is an inclusive or a policy-based approach in which areas for the development of marine renewable energies are not excluded a priori. The other is an exclusionary or zoning approach which sets areas where the installation of marine renewable energies is directly excluded, and this is generally in sites where other uses are already established.

Representatives of the energy industry have expressed their concern for the adoption of the exclusionary approach, considering that this planning system can exclude promising sites, and therefore, hinder the development of marine renewable energies rather than promote it (Wright, 2015; Young, 2015).

4.1 Portugal:

As indicated in Article 4.5 of the LBOGEM and Article 4.2.d of Decree-Law n. 38/2015, one of the objectives of maritime spatial planning is to prevent or minimise conflicts between uses and activities developed in the national maritime territory. In this sense, Article 11 of the LBOGEM and Article 27 of Decree-Law n. 38/2015 establish mechanisms aimed at resolving conflicts between different uses and activities, setting different criteria that shall be applied in order of preference. First, it is required that good environmental status (GES) of the

marine environment and coastal zones must be ensured. Second, that activity which provides more social and economic advantage to the country shall prevail. Third, in case of a tie or inapplicability of this criterion, that use which enables the maximum coexistence of activities shall prevail. In this sense, as will be discussed in Section 5, the installation of marine renewable energy can affect several GES descriptors, thus, making it important to develop technologies and select locations where the impact on the marine environment is minimal. Additionally, marine renewable energies have important economic and social advantages in terms of sustainable development and the fight against climate change and, although currently there are no great possibilities of coexistence with other uses (Wright et al., 2016), new forms of coexistence may develop in the future with the advancement of technology.

Similarly, Decree-Law n. 38/2015 has adopted an 'inclusive system' or 'policy-based system' since it provides for the possibility of adopting new uses through the approval of allocation plans[11], which automatically modifies the situation plan. This, combined with the selected pilot area (regulated by Decree-Law n. 5/2008, of January 8), where marine renewable energies are a priority, confirms a 'mixed system', according to the terminology used by Young (2015), since there are both, a specific zone selected for the development of marine renewable energies (the pilot zone) and other sites in which, although the development of marine

[11] Several authors (e. g Calado, 2015; Ferreira et al., 2015) consider that allocation plans are not true planning instruments, since they do not decide nor schedule a strategic action, but actually as licensing tools.

renewable energy is not a priority, it is not directly excluded. This system can provide a proper balance between certainty and flexibility.

Additionally, Decree-Law n. 38/2015 (Articles 28 and 29) establishes a 'trade-off mechanism' for any case where traditional use is modified into a new one through the approval of an allocation plan, which allows a more inclusive maritime spatial planning system and helps avoid conflicts between marine users. In this sense, if an allocation plan includes the development of a marine renewable energy device and approves it as a 'new use', the owner of the marine use that will be displaced can accept the relocation of its activity in other nearby area with similar features. In this case, the marine renewable energy developer bears the costs related to this relocation. However, if the owner disagrees with the relocation and decides to renounce its right of private use of the marine space, it must be indemnified by the marine renewable energy promoter. The compensation consists of an amount agreed between them which covers the investment on fixed and semi-fixed installations that have not yet been amortised according to the duration provided for in the private use title. In case of impossibility of relocating the use, the owner must also receive a compensation for loss of profit along with the aforementioned compensation amount. In all these cases, if the cause of the displacement of the use is 'public interest', instead of the developer, it is the Portuguese state that is obliged to pay compensation except in cases of natural causes.

In addition, Decree-Law n. 38/2015 establishes a system of regular reviews of the situation plan. In this sense, Article 39 of Decree-Law n. 38/2015 envisages a revision of the situation plan every five years as a general rule, in the event that it is necessary to adapt it to the evolution of economic, social, cultural, and

environmental conditions, or to the pursuit of the public interests that determined it. This can provide flexibility to Portuguese maritime spatial planning, which is a key factor in accommodating the introduction of new industries, such as marine renewable, and to adapt to the development of technology, while integrating new knowledge (Wright, 2015).

4.2 Spain:

The Spanish marine spatial planning legal system is less flexible than the Portuguese legal system is, and therefore, has lesser capacity for rapid adaptation to technological advances in the marine renewable energy industry than the Portuguese legal regime does. In this sense, Royal Decree 363/2017 establishes a single category of MSPs, without distinguishing between a general plan, similar to the Portuguese 'situation plan' and other plans, similar to the Portuguese 'allocation plans' directed at introducing new activities that are not included in the general plan. Similarly, Royal Decree 363/2017 establishes a maximum period of 10 years for the revision of MSPs, which seems too long compared to the maximum period set in the Portuguese system, which is 5 years. As noted by Schaefer and Barale (2011), the current practice indicates that maritime spatial planning processes should be reviewed after a period of 5-7 years. In addition, it is surprising to note the omission of any reference to the principle of adaptive management within the principles of Royal Decree 363/2017, although Law 41/2010 on the protection of the marine environment of 21 December does refer to this principle under Article 4.

It is also important to establish a clear legal regime where specific priority criteria are developed to justify and legitimise the selection of specific sites for the installation of marine renewable, as well as setting compensation mechanisms

aimed at compensating those users affected by these facilities. However, Royal Decree 363/2017, unlike the Portuguese legal regime, neither establishes priority criteria between activities, nor sets up specific mechanisms for compensation and the resolution of conflicts between different uses[12]. However, it takes into account the development of marine renewable energies. In this sense, Article 10.2 includes 'the production of energy from renewable sources' within a list of potential activities and interests to be included in MSPs. Similarly, the explanatory memorandum refers to the benefits that the production of marine renewable energy can have in the mitigation of, and adaptation to, climate change. In addition, Article 5.c of Royal Decree 363/2017 includes within the objectives of the MSPs 'the sustainable development of the marine sectors, among others (...)' the use of energy and raw materials in the sea'.

Royal Decree 363/2017 (Article 4), following the line of Law 41/2010, provides for the elaboration of a MSP for each marine spatial demarcation on the basis that the peculiarities of each of them make it appropriate to have separate planning. This circumstance may justify that the wording in Royal Decree 363/2107 is of such a general and superficial nature (without establishing specific measures of prioritisation of uses or compensation systems), leaving it up to each MSP to specify the criteria and measures used according to the special characteristics of each marine demarcation. In relation to the exploitation of marine renewable energies, the Canary demarcation and the North Atlantic demarcation are the

[12] Royal Decree 363/2017 (articles 4, 5 and 6) merely indicates generically that MSPs shall take into account interactions between land and sea, peculiarities of marine demarcations and environmental, economic, social and security aspects. Thus, it will be the turn of the planning instruments to detail priority criteria and compensation mechanisms.

Spanish demarcations where several pilot projects are being developed in experimental and trial phases, and where, therefore, MSPs are more likely to include such facilities.

Pending the implementation of Spanish MSPs, it can be said that the Spanish legal traditional approach in relation to marine renewable energies is an 'exclusionary or zoning approach' according to the terminology of Young (2015) and Wright (2015). In this sense, the third additional provision of Royal Decree 1028/2007 directly excludes, a priori, the installation of offshore wind farms in those areas designated as 'excluded zones' by the strategic environmental assessment of the Spanish coast for the installation of offshore wind farms prepared by the government in 2009, given the risk that such devices may significantly affect the marine environment in these areas.

5. The need for increasing the Protection of the marine environment against negative effects derived from marine renewable energies:

The development of marine renewable energies can hamper the achievement of the goal pursued by the Marine Strategy Framework Directive 2008/56/EC (MSFD) of achieving and maintaining a GES of the marine environment by 2020 at the latest (Article 1)[13]. Accordingly, the MSFD establishes the need for phasing out 'marine pollution' (Article 3), including within this concept 'the introduction by humans of […] energy, including marine underwater noise […]' (Article 3). Similarly, Annex I of MSPD establishes a list of 11 GES descriptors, many of

[13] Article 1 of MSFD establishes the obligation of developing 'Marine Strategies' by Member States in order to achieve the goal of achieving and maintaining a GES.

which can be affected by the implementation of marine renewable energies, such as the maintenance of biodiversity (1) (e.g. collision of birds with offshore wind turbines), the integrity of the sea floor without benthic ecosystems suffering adverse effects (6) (e. g. electromagnetic fields caused by submarine cables), and levels of introduced energy, including underwater noise, which do not adversely affect the marine environment (e.g. acoustic disturbance caused by ocean energy devices) (11), (O'Hagan, 2015; Soria-Rodríguez, 2016).

Six years after the approval of the MSFD, the MSPD was passed with the aim of achieving not only ecological goals, but also economic and social targets (Articles 1 and 3, MSPD), inter alia, the sustainable development of marine sectors, such as energy sectors (Article 5, MSPD).

The scientific doctrine shows doubts about the main purpose of maritime spatial planning taking into account the environmental objectives already posited by the MSFD in 2008, although it seems more of an extension of the thesis that interprets a prevalence of socio-economic development objectives ('soft sustainability') on the environmental protection of the marine environment ('hard sustainability'), mainly represented by MSFD (Jones et al., 2016; Qiu and Jones, 2013; Wright et al. 2016). Several authors (e.g. Wright et al., 2016) have noted that implementing MSPD can serve to unify all of these objectives rather than replace them. Similarly, Soria-Rodríguez (2016) highlighted that the development of marine spatial plans within the framework of the MSPD can help strengthen the environmental protection system established by the MSFD through its interaction with the Regional Conventions as the main instrument of regional cooperation (the OSPAR Convention in the case of the North Atlantic demarcation), thereby identifying the most suitable locations to minimise the

environmental effects of marine renewable energies. In addition, the EWEA (2012) pointed out that the development of MSP can help locate and reduce the cumulative effects caused by human activities (especially the installation of marine renewable energies) on the marine environment.

5.1 Portugal:

As highlighted in the scientific literature (e.g. Calado, 2015; Ferreira et al., 2015; Frazão et al., 2014) Decree-Law n. 38/2015 is more closely focused on economic growth (economic-based approach) rather than on environmental sustainability and the achievement of an ecosystem-based-management (EBM). However, as pointed out by Schaefer and Barale (2011), the Ecosystem Based Approach must be the fundamental principle of maritime spatial planning, according to which every maritime spatial planning process must be adapted to the specific and particular conditions of the ecosystem. Douvere and Ehler (2007, 2009) highlighted the need to move forward from theory to concrete action through the development of specific mechanisms aimed at implementing the EBM by governments, noting that one of these measures is precisely maritime spatial planning. However, as Ehler (2015) pointed out, a practical method to bring the concept of EBM into practice has not yet emerged. This has special importance in the field of marine renewable energies where the achievement of effective protection of the marine environment against the negative effects derived from their installation, operation, and removal is just as important as the promotion of marine renewable energies.

Several key environmental concerns highlighted by legal and scientific literature are a lack of references in the text of Decree-Law n. 38/2015 to environmental issues compared with those references related to the economic exploitation of

the sea (Calado, 2015; Frazão et al., 2015); the provision of Article 104.4 of Decree-Law n. 38/2015, under which instruments of protection of the marine environment designated by autonomous regions adopted within the framework of international and national commitments (e.g. an existing and approved marine protected area) can be excluded from the situation plan on the basis of 'national interest' by decision of the Central Government (Ferreira et al., 2015; Frazão et al., 2015); the possibility of exempting the situation plan from the application of the Strategic Environmental Assessment (Article 12.1.e of Decree-Law n. 38/2015) and the application of the allocation plans to the EIA (Article 23 of Decree-Law n. 38/2015) instead of to the Strategic Environmental Assessment, since the EIA in Portugal is not designed for the reality of the marine environment, nor does it cover all the projects that could be developed at sea (e.g. the wave parks are not expressly mentioned in the Portuguese legal regime concerning EIA) (Ferreira et al., 2015; Frazão et al., 2015).

As O´Hagan (2015) and Soria-Rodríguez (2016) highlighted, the installation of marine renewable energies can directly affect several descriptors of GES established by the MSFD, transposed into Portuguese domestic law by means of Decree-Law No. 108/2010 of October 13, under which 'marine Strategies' have been developed, aimed at achieving and maintaining the achievement of a GES of the marine environment. This raises questions on the compatibility of maritime spatial planning instruments (the situation plan and allocation plans) established under the MSPD and its transposition, and 'marine Strategies' established under the MSFD and its transposition. Adequate coordination between marine strategies and MSPs can be facilitated by the fact that the body responsible for meeting the objectives of marine strategies (the achievement and maintenance

of a GES), namely, the GDNRSMS, is also responsible for evaluating and licensing the development of private use in the national marine space (Frazão et al., 2015).

Monitoring and assessment are necessary tools not only to achieve a flexible and adaptive MSP, but also to help increase knowledge of the effects of authorised activities on the marine environment (Ferreira et al., 2015; Schaefer and Barale, 2011). Therefore, it is important to establish the steps, resources, and funds necessary to conduct these two key elements of maritime spatial planning (Douvere and Ehler, 2007; Schaefer y Barale, 2011). However, Decree-Law n. 38/2015 refers to the monitoring and assessment phases in vague or non-existent terms without establishing specific obligations for private users and public institutions (e.g. in relation to the specific mechanisms for collecting, transmitting, and evaluating data) (Ferreira et al., 2015). In this connection, there is a lack of specific mechanisms aimed at ensuring the mandatory monitoring of environmental parameters and allowing the alteration of planning instruments when justified causes are given (e.g. certain limits of variability or change), in line with the principle of adaptive management (Calado, 2015). Similarly, several authors (e.g. Frazão et al, 2015) have pointed out the need to create an external scientific committee responsible for the phases of monitoring and assessment of maritime planning instruments that provide a technical, scientific, and impartial data analysis to government entities.

5.2 Spain:

As noted in the case of the Portuguese system, the legal literature (e.g. Menéndez, 2016; Sanz, 2018) raises questions on the incardination of marine planning instruments developed under the MSPD (and Royal Decree 363/2017)

and marine strategies, developed under the MSFD (and Law 41/2010). As Menéndez (2016) pointed out, the spatial scope of both instruments is the same, that is, all marine waters (with the exception of coastal waters) of each marine demarcation, but their purpose and content are different. In fact, the purpose of the MSP is broader and more ambitious than that of marine strategies, since MSP pursues not only ecological objectives, namely, 'the protection of the marine environment', but also economic and social objectives, namely, 'the management of maritime space with a view to fostering sustainable growth of maritime economies'. Based on this, some authors (e.g. Menéndez, 2016) pointed out that marine strategies can be configured as a (specialised) part of the MSP, since marine strategies have the same spatial scope as the MSPs do, but a more restricted and specific objective, that is, the achievement and maintenance of a GES of the marine environment (Article 9.1 Law 41/2010). However, the argument that MSPs should be considered as part of marine strategies also seems a tenable interpretation, since, as indicated in Article 1.3 of Royal Decree 363/2017, the management of maritime space, regulated by this legal norm, shall be the common guideline for all marine strategies, in accordance with Article 4.2.f of Law 41/2010. Similarly, in connection with this argument, Article 1.3 of Law 41/2010 states that 'the essential instruments of planning the marine environment are marine strategies'. In this sense, Law 41/2010 identifies maritime spatial planning as one of the mechanisms that can be adopted to achieve and maintain a GES (Annex V in relation to Article 13 of Law 41/2010) (O'Hagan, 2015; Suarez de Vivero and Rodríguez Mateos, 2012). In any case, the fact that the ministry of Fisheries, Agriculture, Food, and Environment is the key office responsible for both, the elaboration of the MSPs (and, therefore, for the selection of the best

locations to install marine renewable facilities), and the elaboration of the marine strategies themselves, (and, therefore, for the establishment of the necessary measures to achieve a GES of the marine environment) can favour adequate interrelation between both instruments.

On the other hand, given the importance of the ambitious objectives of the MSPs, Menéndez (2016) and Sanz (2018) defend the idea that marine spatial planning should have been regulated in Spain by law rather than by Royal Decree, which is a norm of a lower rank.

6. The need for taking into account land-sea interactions and enhancing coordination between Central Government and Autonomous Regions:

The activities developed on land can have a direct impact on the activities developed in the marine environment. This is why Schaefer and Barale (2011) highlighted that achieving integration between land planning (especially coastal management) and marine spatial planning is essential to achieve a successful long-term MSP. This becomes particularly important in relation to marine renewable energies, since several of the elements that make up these technologies are located on land, such as substations or auxiliary facilities. Thus, achieving coherence and effective coordination between land and maritime planning is required (O´Hagan, 2015; Schaefer and Barale, 2011; Smith et al., 2011). Similarly, a holistic view of the interactions between the uses developed in both, the marine and coastal areas, is of great importance to be able to effectively address cumulative impacts that may occur on the activities developed in the terrestrial and marine environments (Kidd and Shaw, 2014; Young, 2015).

Similarly, it is particularly important to achieve a vertical coordination between the different governance levels and responsible authorities in the management of marine space and resources (Schaefer and Barale, 2011), specifically, in the field of marine renewable energies (Wright et al., 2016).

6.1 Portugal:

With the approval of the LBOGEM, the Decree-Law n. 38/2015 and Law 31/2014 on the basis of the policy of land planning, Portugal adopts a legal regime that is separate from marine spatial planning and terrestrial spatial planning, instead of regulating both 'land' and 'sea' in the same normative text. The text of the preamble of the LBOGEM justifies this distinction by 'the specificity of the marine environment' and the fact that it is common for an area in the sea to include different uses and activities at the same time. However, this differentiation is considered unjustified by several authors (e.g. Calado, 2015) on the idea that both, land and sea, are 'territory' over which the State exercises its power.

Despite the differentiated legal regime of land planning and marine planning, the LBOGEM (Article 27), Law 31/2014 (Articles 1.2 and 45.1) and the Decree-Law n. 38/2015 (Article 5), highlight the need for coordination and compatibility between the different instruments in relation to the sea and the land, provided that these fall in the same area or demand integral coordination. However, as noted by the legal and scientific doctrine (e.g. Calado, 2015, Ferreira et al., 2015; Frazão et al., 2015), these normative texts do not establish specific mechanisms aimed at allowing effective coordination and articulation between land and sea planning instruments. Thus, for example, these regulations do not make clear the interrelations between both planning instruments (Ferreira et al., 2015), which gives rise to different interpretations. In this sense, Frazão et al. (2015)

understand that allocation plans can take preference over terrestrial plans and programmes on the basis of Articles 5.3 and 18.4 of the Decree-Law n. 38/2015, which establishes that pre-existing terrestrial plans and programmes that are incompatible or inconsistent with maritime planning instruments (situation plan and allocation plans) must be revoked or modified. On the other hand, Becker-Weinberg (2015) understand that there is no hierarchy between terrestrial and marine planning instruments. Article 38.1.c of the Decree-Law n. 38/2015 seems to prioritise future terrestrial plans over the situation plan, establishing that they can modify it.

Moreover, Ferreira et al. (2015) highlighted that Decree-Law n. 38/2015 does not achieve adequate coordination or administrative cooperation between the Central Government and Autonomous Regions of Madeira and Azores, which could contravene the principle of cooperation and the principle of 'shared management' (as enshrined in Article 4 of the Portuguese Constitution). As noted by Chantal (2015), Articles 38.4 and 104.3 of Decree-Law n. 38/2015 can be contrary to the legislative environmental competences of the Autonomous Regions of the Azores and Madeira. Indeed, Article 38.4 of the Decree-Law n. 38/2015 subjects the approval of instruments relating to the protection of the marine environment in waters adjacent to the autonomous regions of the Azores and Madeira, to the binding consultation of the Central Government. Similarly, as noted in subsection 5.1, Article 104.3 of Decree-Law n. 38/2015 empowers the Portuguese Central Government to, in the case of 'national interest', exclude from the situation plan any instruments related to the protection of the marine environment designated by the autonomous regions of Azores and Madeira in their adjacent marine waters.

This provision not only puts at risk an adequate environmental protection of the marine waters adjacent to both archipelagos, but also may increase the likelihood of clashes between the Central government and autonomous regions in the licensing of marine renewable energy projects. This is especially since the autonomous regions and the Portuguese Central Government exercise 'shared management' of the licensing of renewable marine energies in the waters adjacent to the archipelagos of Madeira and Azores (Article 8 of the Statute of Autonomy of Azores; Decree n. 315/2014 of 1 April of the Portuguese Constitutional Court) (Chantal, 2015). In this sense, it might be that the Central Government, based on the achievement of certain energy objectives of 'national interest', excludes from the situation plan a marine protected area of regional designation. In a case like this, it is likely that there will be discrepancies between the autonomous regions and the Central Government during the process of authorising specific renewable marine energy projects in this location.

6.2 Spain:

The Spanish legal-political model is a decentralised system where there is a division of powers between the Central Government and the autonomous regions (Articles 148 and 149 of the Spanish Constitution). Thus, coastal autonomous regions have important functions (attributed by the Spanish Constitution and their respective statutes of autonomy) that can be projected on the marine environment, such as coastal management (Article 148.1.3º of Spanish Constitution), fishing in internal waters, shellfish, and aquaculture (Article 148.1.11º), the establishment of additional environmental protection standards (Article 148.1.9º), and regional navigation (Article 148.1.5º). On the other hand, the Spanish Central Government is competent in other matters, such as the

establishment of basic environmental standards (Article 149.1.23º) and fishing in the territorial sea and the exclusive economic zone (Article 149.1.19º).

The competence of regulating, managing, and authorising marine renewable energies deserves special mention. Article 149.1.22º of the Spanish Constitution states that the Central Government is competent in this matter, provided that the use of the energy produces effects on more than one autonomous region or leaves its territorial scope. In another case (e.g. affecting only one autonomous community) it could be interpreted that the relevant autonomous region is competent to regulate, manage, and authorise the installation of marine renewable energies. However, Royal Decree 1028/2007 (first additional provision) states that the Central Government has exclusive competence in this matter. This normative text has aroused great controversy concerning the scarce participation that it assigns autonomous regions in the authorisation procedure. The Spanish Constitutional Court (judgement 3/2014 of 4 December, by which the positive conflict of competences between the regional government of Galicia and the Spanish Central Government was resolved) has interpreted that coastal autonomous regions are not competent in this matter, arguing that on the basis of Article 137 of the Spanish Constitution, the territory of an autonomous region extends only to the municipalities that are part of it but not to the sea, since it is not considered as 'territory' by the Spanish Constitutional Court. However, several authors (e.g. Calado, 2015; Sanz, 2018) do not agree with this judicial interpretation and argue that the sea should not be separated from the concept of 'territory'. On similar lines, Díaz (2016) considers that coastal autonomous regions should be responsible for licensing marine renewable energy projects on the basis of their competence of establishing and executing legal norms for

additional protection in environmental matters (Article 149.1.23º of the Spanish Constitution) or at least, they should have greater legally recognised participation in the licensing process, since they have competences which can be affected by the installation of these devices (e.g. fishing in internal waters, regional navigation, aquaculture, and shellfish-gathering).

The initial proposal for a MSPD sought to establish a framework for maritime spatial planning and integrated management of coastal zones. However, the final version of the MSPD (Article 2.1) excludes coastal areas from its scope with the aim of respecting the competence of member states in the sphere of territorial planning (Menéndez, 2016). Despite this, the MSPD (as well as Royal Decree 363/2017) constantly repeats throughout its articles, the need for MSPs to take into account the interactions between land and sea (e.g. Recitals 9, 16, and 18 and Articles 1.2, 4, 6.2, and 7 of MSPD; and Articles 1.2, 4, and 6 of Royal Decree 363/2017). That is why several authors (e.g. Díaz, 2016) saw an opportunity in the MSPD to increase the participation of the autonomous regions in planning, management, and licensing of marine renewable facilities. However, despite the fact that Royal Decree 363/2017 makes repeated references of the need of considering a land-sea interaction, the legal literature (e.g. Sanz, 2018) has criticised that this legal norm does not provide the specific mechanisms necessary for achieving real and effective coordination between marine and coastal spaces. Moreover, Royal Decree 363/2017 provides for scarce participation of the autonomous regions in the process of preparing the MSPs, which is limited to their intervention in the consultation phase (Sanz, 2018), giving the Spanish Central Government (specifically, the ministry of Fisheries, Agriculture, Food, and Environment) a leading role in the elaboration of MSPs.

Menéndez (2016) proposes, as a solution, the creation of a committee of competent authorities that includes the environmental departments of autonomous regions.

In any case, it is important to develop specific mechanisms aimed at achieving adequate coordination between marine spatial plans (approved by the Central Government) and coastal management plans (approved by the relevant regional government) in order to avoid inconsistencies between both planning instruments (e.g. suppose that a MSP entails the installation of an offshore wind farm near a coastal area where, however, the installation of cables and auxiliary devices are excluded by the relevant coastal management plan, which can create uncertainty for investors and developers).

7. Conclusions and policy implications:

This article concludes that:

i) the Portuguese legal system, not only establishes an electronic single-window system that can help streamline the licensing process for the installation of marine renewable energies, but also sets up a planning system that is more flexible than the Spanish legal system and, thus, is better adapted to the development of new marine renewable technologies;

ii) the Portuguese system, unlike the Spanish legal regime, establishes specific criteria aimed at prioritising some uses over others and sets trade-off mechanisms aimed at compensating those marine users (e.g. fishermen) whose activities can be displaced by new and emerging uses (such as the exploitation of marine renewable energies), which can help

reduce conflicts between promoters of marine renewable energy projects and other users of the marine environment. In this regard, it could be also useful to introduce legal and political mechanisms in both countries, aimed at promoting the employment of local workers in the installation or maintenance of marine renewable energy devices, especially the labour reintegration of those marine users whose livelihoods may be affected by the implementation of such installations. This can also help achieve a just balance between social benefits and costs of energy, which is in line with energy justice—considered one of the core principles of energy law by several authors (e.g. Heffron et al., 2018).

iii) neither Spain's Royal Decree 363/2017 nor Portugal's Decree-Law n. 38/2015 offers adequate protection of the marine environment against negative effects arising from the installation of marine renewable energies. In this regard, it would be desirable for decision-makers to strike a balance between economic 'blue growth' and environmental perspectives, achieving and maintaining a good environmental status of the marine environment on the one hand, and fighting climate change on the other. In this connection, the application, *mutatis mutandis,* of several of the mechanisms aimed at resolving the 'energy trilemma', such as the 'the Energy Justice Metric' proposed by Heffron et al. (2015), could be of great help.

iv) both legal regimes lack specific legal mechanisms aimed at improving coordination between maritime spatial planning instruments and land planning instruments, and between the Central Government and the

autonomous regions, which may hinder the installation of marine renewable energies.

The comparative analysis of maritime spatial planning legal regimes in both, Spain and Portugal, conducted in this research provides detailed information on the main strengths and weakness of both legal systems in relation to the development of marine renewable energies. The results can help planners, decision-makers, and regulators in developing and adapting their respective policies and laws with the aim of achieving EU and national goals and commitments in relation to the integrated marine policy, blue growth, the achievement of a GES of the marine environment, the energy transition, the development and diversification of renewable energy sources, and the mitigation of climate change. Further research cooperation between climate, energy and environmental scholar communities is necessary in order to 'increase public understanding and public acceptance of a just transition' (Heffron and McCauley, 2018).

Moreover, by increasing knowledge on the influence of the marine governance regimes of Spain and Portugal on the development of marine renewable energies, this article can serve as a starting point for further development of mechanisms aimed at coordinating and harmonising the regulatory and policy frameworks in relation to the implementation of such devices by both countries (e.g. by developing uniform criteria for the prioritisation of marine uses and setting similar specific standards and measures aimed at protecting the marine environment in the face of adverse effects arising from the installation of marine renewable energies). Accordingly, this can help address the transnational environmental impacts of marine renewable devices more effectively. This is

especially important given that the new Portuguese pilot area where further marine renewable energy projects are to be developed, about 20 km away from the municipality of Viana do Castelo, is close to Spanish jurisdictional waters, about 60 km away from the Galician coast -.

Appendix A:

Decree-Law n. 5/2008 designated a pilot zone (regulated by a concession contract with the Portuguese state) of 320 km^2 between 30 and 90 metres deep near São Pedro de Moel for the production of wave energy under demonstration, in the pre-commercial or commercial regime (Andrade, 2015), seeking to promote and streamline the licensing procedures of this renewable energy source in the initial phase of development (statement of reasons Decree-Law No. 5/2008). The entity responsible for the management of this area, namely, ENONDAS SA, was created by the National Electricity Network (REN) based on Decree-Law 5/2008 and Decree-Law 238/2008. In 2010, this managing entity entered into a public service concession contract with the Portuguese Government (in line with Article 5 of Decree-Law No. 5/2008), which details, along with the object of the concession, its competences, which include the licensing (and inspection) of production activities in this area, being responsible for issuing both, the 'establishment licence' (which gives the developer the right to install prototypes and power parks of the waves) as the 'exploitation licence' (which empowers the developer to inject the energy produced into the public electricity grid) (Clause 12 of the Concession Contract of 2010, Article 22 Decree-Law No. 5/2008 and Base X of Decree-Law 238/2008). As Andrade (2015) pointed out, this one-stop-shop system, where a single management entity coordinates all the required

procedures and licences, can be of great help to streamline the authorisation procedure.

The procedure required to obtain the establishment licence[14] starts with the application, accompanied by several documents (e.g. the project and the study of environmental incidences), from the promoter to the managing entity, which shall send these documents to several agencies (namely, the General Direction of Energy and Geology, the Portuguese environmental Agency, the General Directorate of Maritime Authority, and the GDNRSMS). These bodies issue their opinions and, where appropriate, request additional information from the developer. Finally, the managing entity issues the establishment licence (which shall contain all the conditions imposed by the consulted entities and by the managing entity) (Articles 29 to 34 of Decree-Law n. 5/2008 and Articles 7 to 9 of the Regulation of access to the pilot zone <available online in: <www.oceanplug.pt>, prepared by the managing entity based on Base XII of Decree-Law n. 238/2008).

Once the installation is complete, in order to obtain the exploitation licence, the developer, will require the General Directorate of Energy and Geology (DGEG) to carry out an inspection and prepare a report indicating whether the facility is ready for operation or not. In case of a negative report, the promoter shall have to take measures to adjust the installation to certain standards or conditions

[14] In the case of projects at commercial scale, a competitive procedure shall take place, convened by the managing entity, where the initial applicant enjoys a preferential right over the rest of the bidders, provided that he agrees to abide by the conditions of the proposal selected by the managing body (Arts 30 and 31 of Decree-Law No. 5/2008).

(Articles 10 and 11 of the Regulation for access to the pilot zone). Finally, if the report is positive, the managing entity will issue the exploitation licence (Article 11 of the Regulation for access to the pilot zone).

Recently, the Portuguese Government has decided to move the pilot zone from São Pedro de Moel to an area close to Viana do Castelo, since the usable wind potential is greater in this area (from 900 to 970 MW) (Resolution of the Council of Ministers n. 12/2018 of February 19, 2018). This change not only implies modifications in the place of the concession contract of the pilot zone but also in its object, which is extended to all marine renewable energies in general (and not only to wave energy) (Resolution of the Council of Ministers n. 12/2018 of February 19, 2018).

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