MISSIONE 4
ISTRUZIONE
RICERCA

NATIONAL RECOVERY AND RESILIENCE PLAN (NRRP) – MISSION 4 COMPONENT 2
INVESTMENT 1.1 – "Fund for the National Research Program and for Projects of National Interest (NRP)" DDG N.1409 14.09.2022

University of Genoa
Preliminary report: review of the state of the art on marine renewable energies

Project Code: P2022RS84X

Project CUP: D53D23022440001

Project Title: Legal Strategies for Actions and Interactions in the Sustainable Blue Economy

Finanziato dall'Unione europea NextGenerationEU
Ministero dell'Università e della Ricerca
Italiadomani PIANO NAZIONALE DI RIPRESA E RESILIENZA
Università di Genova
DIGI DIPARTIMENTO DI GIURISPRUDENZA

Legal Strategies for Actions and Interactions in the Sustainable Blue Economy – Renewable energies

According to the planned activities, the Genoa-based RU is in charge of "***Blue growth through the sustainable production of energy at sea: applicable legal framework and room for improvement***".

The expected impact of the research activities of the Genoa-based RU, within the framework of the project, is to provide a series of **recommendations for improving the current legal framework at the national, European and international level**, with specific regard to the following targets:

i) identifying the **legal regime applicable to the exploitation of the different MREs in the different maritime areas**;

ii) identifying the **interferences that the promotion of MREs is liable to determine upon other interests relevant for the use of maritime spaces** (also with a view to supporting the research carried out by the RU based at the University of Messina);

iii) **removing or reducing the lack of coordination in legislation and procedures for an efficient exploitation of MREs**;

iv) **developing strategies and policies aimed at maximizing the promotion of MREs** within the limits set by the relevant legal framework.

As initially foreseen, the first six months of the activities of the project have been devoted to a review of the state of the art with a view to steering the following activities of the unit towards the most promising fields of research as well as guiding the joint discussion of the four units at the meeting of 29th May 2024.

In light of the above-mentioned objectives, the present report – which summarizes the outcome of the review of the state of the art conducted by the Genoa-based RU – is structured into the following sections.

Section A – *Description of the phenomenon under scrutiny*

Section B – *Overview of the relevant legal sources*

Section C – *Relevant comparative experiences*

Section D – *Identification of potentially interesting case-studies*

Section E – *Potentially interested stakeholders*

Section F – *Involved institutions*

Section G – *Tools for the involvement of civil society*

Section H - *Bibliography*

* * *

SECTION A – DESCRIPTION OF THE PHENOMENON UNDER SCRUTINY

The sea offers significant possibilities for the production of alternative energies. These include offshore wind energy, tidal energy from tidal water displacement, wave kinetic energy, osmotic energy generated by the difference in salinity of fresh and salt water at river mouths, and thalassothermal energy from the difference in temperature between surface and deep water.

Some forms of marine renewable energy are merely the declination, in the marine environment, of forms of energy production commonly used on land (e.g. the exploitation of wind energy through the installation of wind turbines or the installation of solar panels), while others are more 'specific' to the marine context in that they exploit natural elements peculiar to it that cannot be found on land (e.g. the exploitation of currents or tidal movements).

In this respect, the United Nations Secretary-General's report on Oceans and the Law of the Sea of 4 April 2012 - after defining 'renewable energy' as "*any form of energy from solar, geophysical or biological sources that is replenished by natural processes at a rate that equals or exceeds its rate of use*" - identified, in very general terms, 'marine renewable energy' as "*a subset of renewable energy involving natural processes in the marine environment*".

The forms of renewable energy that can be obtained in (or from) the sea include: a) wind energy, which can be exploited by means of floating or anchored to the seabed wind turbines; b) geothermal energy, which - similarly to the corresponding form of energy exploited on land - makes use of the heat present in the earth's crust and subsoil; c) bio-energy produced from biomass (especially algae); d) the installation of solar panels; e) the so-called ocean energy in the strict sense of the word, which - in turn - includes various alternative forms of exploiting the sea with a view to producing not only electricity but also drinking water.

Ocean energy includes, in particular, the forms of renewable energy peculiar to the marine environment, each of which exploits - through the use of different technologies - a certain element that is specific to that context. The category of ocean energy can thus include, for example, i) wave kinetic energy (also known as cymoelectric energy), which is produced through specific technologies that (albeit with different methods and approaches) 'absorb' the energy produced by wave motion; ii) tidal energy, which exploits the raising and lowering of tides through, for example, the use of sea barriers by means of which water is retained and then made to flow through turbines; (iii) the energy produced by sea currents that are generated in the open sea due to the effect of the wind, the earth's rotation or temperature differences; (iv) thalassothermal energy, which uses temperature differences between surface water and water at greater depth to heat (and subsequently cool), in cyclic mode, a liquid whose pressure in turn moves a turbine connected to a generator; (v) osmotic or salt gradient energy, which exploits the difference in salinity between fresh and salt water where the two meet (e.g. at river estuaries).

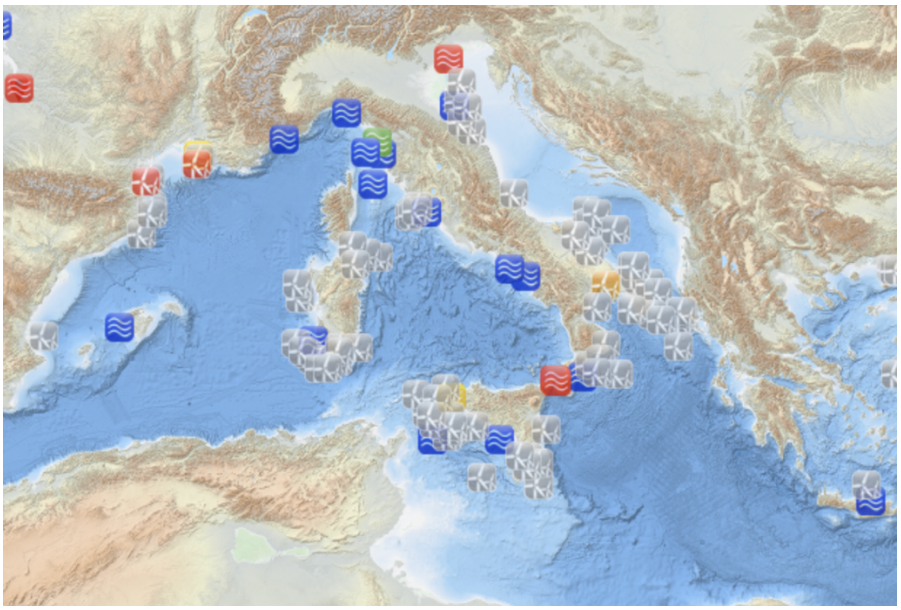
The positive externalities of the development of renewable energy at sea are well known (reduction of atmospheric emissions, decarbonisation, creation of new jobs, strengthening of competitiveness) and the debate tends to focus on them.

The exploitation of renewable energies also brings, however, significant negative externalities with regard to the impact produced on the marine environment in the broad sense (including fauna and landscape) and on the usability of marine spaces for alternative and competing destinations (such as, for example, shipping, fishing, tourism). One might think of noise pollution, the effects on currents and water turbidity, electromagnetic pollution, the possible release of toxic substances, the visual impact on the coastal landscape, and possible interferences with the habits of aquatic fauna.

In this context, the contribution of the law of the sea should focus, in particular, on regulating the phenomenon at issue in order to manage the negative externalities described above, by coordinating the exploitation of renewable energies at sea with other uses of marine spaces (according to the very logic behind this project).

In order to offer a more accurate (also from the visual point of view) representation of the phenomenon under scrutiny (focused on the Mediterranean Sea and, more specifically, on the Italian coasts) the European Atlas of the Seas offers an invaluable tool.

The following figure represents the current distribution (last access to the website: 13th May 2024) of the location of projects for the exploitation of marine renewable energies.



Here below the legend of the symbols used in the map is provided:

It has to be specified that not all the projects described on the map are already implemented (as a matter of fact, most of them are only at an initial stage of development/planning). Nonetheless, for the purposes of this project, the map above offers an interesting overview of the distribution of the projects, both from a geographical point of view and also with regard to their subdivision among the different types of marine renewable energies.

The most significant data that can be retrieved for the purposes of the analysis carried out in the next paragraphs are that: 1) the large majority of the projects are still in the planning phase; 2) the large majority of the projects consist of wind farms (while there are fewer ocean energy projects); 3) the large majority of the projects are located in proximity to the mainland and tend to be concentrated in specific maritime areas.

The above remarks confirm the relevance of the objectives that the present project aims to achieve. Indeed, on the one hand, the very fact that most projects are still in the planning phase emphasizes the impact that any devised solution might still have on the development of the area of law under scrutiny. On the other hand, the concentration of the localization of the planned projects in proximity to the mainland particularly stresses the need for a coordination of the production of marine renewable energy with other competing uses of the sea.

* * *

SECTION B – OVERVIEW OF THE RELEVANT LEGAL SOURCES

B.1. International Law legal framework.

As it is well known, International Law divides the oceans in different areas, upon which the States can exercise different powers and rights. The exploitation of the sea for the production of energy, therefore, will be subject to different rules according to the different areas where it is carried out.

In the **territorial sea**, the coastal State may, in the exercise of its sovereignty, install facilities aimed at exploiting renewable energies, in accordance with the provisions of Article 2 UNCLOS, pursuant to which the sovereignty of the coastal State extends - in addition to the territorial sea - to the overlying airspace, the seabed and the corresponding subsoil. This possibility is not, however, unlimited but made subject to the rules referred to in Article 2(3) UNCLOS, including the obligation to ensure that third States exercise the right of innocent passage recognized by Article 17 of the

Convention. In this respect, Article 21 UNCLOS admits, moreover, that the coastal State may regulate the right of innocent passage in such a way as to protect offshore installations and infrastructure.

Within the **exclusive economic zone**, on the other hand, the coastal state enjoys sovereign rights extended to, *inter alia*, the production of energy from water, currents and wind. In this regard, in fact, Article 56 UNCLOS grants the coastal State "*sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds*". In order to exercise these rights, the coastal State is also entitled to construct artificial islands, installations and other facilities over which - pursuant to Article 60(2) of the Convention - it exercises exclusive jurisdiction for all purposes (customs, fiscal, health). Even in the exclusive economic zone, however, the introduction of safety zones to protect the installations in question is permitted, albeit under the conditions and within the limits provided for by Article 60(4) UNCLOS.

As far as the **continental shelf** is concerned, Article 77 UNCLOS recognizes the exclusive sovereign rights of the coastal State "*for the purpose of exploring it and exploiting its natural resources*" (par. 1). However, the natural resources that are the subject of the rights in question correspond - according to the provisions of paragraph 4 of Article 77 - to the "*mineral and other non-living resources of the seabed and subsoil together with living organisms belonging to sedentary species, that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed or the subsoil*". This means that on the continental shelf the coastal State will have, for example, the exclusive right to exploit geothermal energy, but, under Article 77 UNCLOS, this right does not extend to the exploitation of currents and winds (in the waters and air space above the continental shelf, respectively). This is confirmed by Article 78 of the Convention, which - in regulating the '*Legal status of the superjacent waters and air space and the rights and freedoms of other States*' - expressly provides that the rights of the coastal State over the continental shelf "*shall not affect the legal status of the superjacent waters or of the air space above those waters*" and at the same time provides that the exercise of those rights shall not infringe or unjustifiably interfere with navigation and the other rights and freedoms which the Convention recognizes to third States.

Finally with regard to the **high seas**, it is believed that the freedom that characterizes this space also includes the exploitation of renewable energies, although this is a faculty not expressly included in the list (which is not exhaustive) of Article 87(1) UNCLOS, which instead makes express reference to the "*freedom to construct artificial islands and other installations permitted under international law, subject to Part VI*" (Article 87(1)(d)). To this end, each State may install facilities on the high seas for the exploitation of renewable energy, with the only limits represented for instance by i) the need to have "*due regard for the interests of other States in their exercise of the freedom of the high seas, and also with due regard for the rights under this Convention with respect to activities in the Area*" (Art. 87(2)); ii) the obligation to use the high seas for peaceful purposes (Art. 88); (iii) the general duty to protect the environment enshrined in Article 192 UNCLOS16 and the corresponding obligation of each State - based on Article 206 of the Convention and affirmed, with reference to the regulation of the Area (but with general scope) by the ITLOS Opinion of 2011 - to assess the environmental impact of the activities subject to its control.

In light of the above, a correct approach to the regulation of renewable energies at sea requires that a distinction be made according to whether or not the respective exploitation takes place within areas subject to the jurisdiction or exclusive rights of states:

1) with respect to areas subject to State jurisdiction (or with respect to which coastal States enjoy exclusive sovereign rights), the ability of the existing legal framework to adequately regulate the phenomenon in question (and coordinate it with other competing uses of the sea) ultimately depends not so much on international law (which merely allocates among states jurisdiction over the various marine areas and regulates in general terms its exercise), but mainly on the content of the territorially applicable domestic law, as (possibly) shaped (also) by the international instruments applicable in each specific regional context. In this perspective (and with particular reference to European Union law), a multiplicity of sectoral instruments might come to relevance (see *infra* § B.2);

2) on the high seas, due to the lack (at least for the time being) of specific regulation of the issue, the coordination of marine energy project with other uses of the oceans will have to be achieved through the general (and generic) due regard clause established by art. 87(2) UNCLOS.

In this regard, it also has to be mentioned that the areas subject to States' jurisdiction are by all means more interesting for the purposes of the present research. Indeed, the high seas are very large and, at the same time, technologies for the exploitation of renewable energies at sea are still at a rather backward stage of development, so that it does not seem reasonable to expect, at least in the immediate future, a massive use of the high seas for the installation of renewable energy plants. On the contrary, it is in the proximity to the mainland that the most significant need for management and coordination is felt (so that the present research can offer a potentially more useful contribution).

B.2. European Union legal framework.

Three premises are in order when dealing with the contribution of EU law in this area.

First of all, it must be noted that the relevant EU documents often employ the expression "*Offshore Renewable Energy*" (or ORE) in order to refer collectively to wind turbines, both fixed to the seafloor and floating, cymolectric energy, tidal energy, offshore solar panels.

Secondly, it is also crucial to remind that, at present, the relevant techniques are notably at very different stages of development and commercialization.

Thirdly and finally, the EU has established precise objectives in terms of offshore renewable energy that are bound to frame the pertinent legislation, corresponding to 61 GW of installed capacity by 2030 and 340 GW of installed capacity by 2050.

Among the issues that particularly worth mentioning in terms of EU legislation and that are going to be further analyzed in the coming stages are the following, with specific regard to activities taking place within the waters pertaining to the jurisdiction of a coastal EU Member State:

- compliance with EU and domestic rules concerning maritime spatial planning;
- the existence of the required permits and authorization;
- marine environmental protection;
- the availability of funds for the realization of a renewable offshore energy plant

In the EU there has long been legislation on maritime spatial planning whose objective is to manage human activities in a coordinated way and strengthen cross-border cooperation between countries that share the same marine waters (directive 2014/89/EU transposed through Legislative Decree 17 October 2016). EU Directive 2014/89, in fact, establishes a framework for maritime spatial planning and includes within its scope of application not only the territorial waters of the Member States, but all waters over which the Member States exercise jurisdiction or sovereign rights.

Article 5(1) of Directive 2014/89 provides that, when developing and implementing maritime spatial planning, Member States shall take into account "*economic, social and environmental aspects to support sustainable development and growth in the maritime sector, applying an ecosystem-based approach, and to promote the coexistence of relevant activities and uses*". In this way, planning aims to contribute to the "*sustainable development of energy sectors at sea, of maritime transport, and of the fisheries and aquaculture sectors, and to the preservation, protection and improvement of the environment, including resilience to climate change impacts*", as well as to foster other objectives such as "*promotion of sustainable tourism and the sustainable extraction of raw materials*".

Under Article 8 of the directive, moreover, maritime spatial plans identify the "*spatial and temporal distribution of relevant existing and future activities and uses in their marine waters*" (par. 1), taking into account the relevant "*interactions of activities and uses*", with particular reference to the following uses: aquaculture areas, fishing areas, installations and infrastructure for the exploration, exploitation and extraction of oil, gas and other energy resources, minerals and aggregates and the production of energy from renewable sources, maritime transport routes and traffic flows, military training areas, nature and species conservation sites and protected areas, raw material extraction areas, scientific research, submarine cable and pipeline routes, tourism, and underwater cultural heritage.

In addition, in its 2020 strategy for harnessing the potential of offshore renewable energy for a climate neutral future, the Commission highlighted the important role of maritime spatial planning to devise the development of renewable offshore energy, assess environmental, social and economic sustainability, ensure coexistence with other activities and ensure that the public accepts the planned deployments.

As regards the authorization procedure, very different practices are found within the EU, as highlighted in a separate section of the present report. They range from the "one-stop shop" system in Germany, to much more complex and longer procedures in France (up to 11 years). Among the best practices we find the Dutch ones with a time period of four and a half years between the tender and commissioning. This undoubtedly constitutes a problem, to which one must add the further problem of litigation.

Something has moved recently to try to improve the situation. Reference has to be made to the introduction into the legislation on the promotion of renewable energy (through the adoption of directive 2023/2413/EU), among other things, of the concept of "*renewable acceleration areas*", understood as a specific place or area, terrestrial or marine or inland waters, which a member State has designated as particularly suitable for the installation of renewable energy production systems.

In the same vein, a Council regulation (no. 2022/2057) has recently been adopted, introducing temporary rules of an emergency nature aimed at accelerating the diffusion of renewable energy and including provisions on the authorization procedure also applicable to offshore renewable energy.

The development of OREs traditionally benefits from significant European funding. This is on the one hand understandable and appreciable, especially since it is a new sector as such

The Court of Auditors has drawn up a review (published in 2023) which has identified just under 500 financed projects (for 2.3 billion euros), but also a difficulty in finding the relevant data due to the different origin of the funding, ranging from Horizon 2020/Horizon Europe, to the Recovery and Resilience Facility, to European Investment Bank financing.

More than half of the financing supports offshore wind (including floating turbines, which need it most), sometimes the financing concerned the development of new technologies, sometimes the transition from the testing phase to the operational one.

Moving, finally, to marine environmental protection, general and specific pieces of legislation appear to be relevant and shall be the subject of additional research, including by way of an example EC Directive 2008/56 establishing a framework for community action in the field of marine environmental policy, on the one hand, and EC Directive 2001/42 on the assessment of the effects of certain plans and programmes on the environment and EU Directive 2011/92 on the assessment of the effects of certain public and private projects on the environment, on the other hand. Projects for offshore wind farms to be built in the outer harbor of the port of Taranto and in the breakwater of the port of Genoa have notably been submitted to such assessments.

B.3. Internal Law legal framework.

It would be impossible to offer a comprehensive overview of the procedures applicable, according to internal Italian law, with a view to approving and authorizing projects for the exploitation of renewable energies (for a more extended overview of such procedures reference might be had to the Study of the Camera dei deputati – Servizio Studi – Dipartimento Attività Produttive, "*La normativa statale per la realizzazione di impianti da fonti elettriche rinnovabili*" of June 2023).

For the present purposes, it suffices to mention that the procedures established according to internal law vary according to the different type of renewable energy as well as according to the complexity of the project.

More specifically, interventions of minor complexity are subject, pursuant to Article 6, paragraph 11 of Legislative Decree no. 28/2011, only to notification to the Municipality (Comunicazione delle

attività in edilizia libera), in the manner already provided for in paragraphs 11 and 12 of the guidelines for the authorization of plants powered by renewable sources adopted by Ministerial Decree of 10 September 2010 pursuant to Article 12, paragraph 10 of Legislative Decree no. 387/2003.

Certain installations from renewable sources and certain modifications to existing installations can be realized subject to a sworn declaration of commencement of works (Dichiarazione di inizio lavori asseverata), pursuant to Article 6-bis of Legislative Decree No. 28/2011.

Another applicable procedure (depending on the type of project) is the simplified enabling procedure (PAS) (Procedura abilitativa semplificata), governed by Article 6, paragraphs 1 to 10 of Legislative Decree No. 28/2011.

Plants with greater power or characterized by greater complexity (e.g. due to the potential impacts on the territory deriving from their location) are subject to the single authorization procedure (Procedimento di autorizzazione unica) pursuant to Article 5 of Legislative Decree No. 28/2011, together with the connected works and infrastructures that are indispensable for the construction and operation of the plants. Substantial changes to plants producing electricity from renewable sources are also subject to single authorization. The authorization procedure is organically regulated by Article 12 of Legislative Decree no. 387/03 - to which the aforementioned Article 5 of Legislative Decree no. 28/11 refers - and by the Guidelines for the authorization of plants powered by renewable sources approved by Ministerial Decree of 10 September 2010, adopted in implementation of the same Article 12, paragraph 10.

Reference also has to be made to the environmental impact assessment (Valutazione di impatto ambientale) under Part Two of Legislative Decree No. 152/2006, which implements European legislation on the subject: where a project is subject to an environmental impact assessment falling under regional competence, all authorizations, understandings, concessions, licences, opinions, concerts, nulla osta and consents, however named, necessary for the realization and operation of the same project, are acquired within the framework of a "conferenza di servizi".

Moreover, the fact that a project for the exploitation of renewable energies is located in a marine area is specifically considered by several provisions for different purposes. *E.g.*, as far as competence for approval is concerned, off-shore installations, including grid connection works, are authorized by the Ministry of the Environment and Energy Security in agreement with the Ministry of Infrastructure and Transport, after consulting, for fisheries-related aspects, the Ministry of Agriculture, Food Sovereignty food sovereignty and forests. The authorization of off-shore installations also includes the granting of the concession for the use of the maritime state property.

In the context of authorization procedures for off-shore plants in suitable areas or in any case in areas not subject to constraints that are incompatible with the establishment of off-shore plants, the procedural deadlines are reduced by one third and the competent landscape authority issues a mandatory non-binding opinion, identifying, where necessary, specific prescriptions aimed at a better integration in the landscape as well as at the protection of assets of archaeological interest (art. 23, par. 4, D.Lgs. 199/2021).

Finally, a fundamental issue (particularly important for the purposes of the present research) deals with the localization of the projects for the exploitation of marine renewable energies. In this regard art. 23 of Legislative Decree No. 199/2021 (Implementation of Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources) comes to relevance.

More specifically, according to par. 2 of art. 23 "*In compliance with the requirements for the protection of the marine and coastal ecosystem, the performance of fishing activity, cultural heritage and landscape, for the purposes of the complete identification of areas suitable for the installation of off-shore renewable energy production plants, are considered as such the areas identified for the production of renewable energy by the Maritime Space Management Plan production of energy from renewable sources pursuant to Article 5, paragraph 1, letter c), of Legislative Decree 17 October 2016 no. 201, and of the Decree of the President of the Council of Ministers of 1 December 2017, on 'Approval of the guidelines containing the guidelines and criteria for the preparation of maritime space management plans', published in the Official Gazette no.19 of 24 January 2018. Within one hundred and eighty days from the date of entry into force of this Decree, the plan referred to in the previous sentence shall be adopted in the manner set forth in Article 5, paragraph 5, of Legislative Decree No. 201 of 17 October 2016*".

Par. 3 of the same provision further specifies that "*Pending the adoption of the maritime spatial management plan referred to in paragraph 2, the following shall in any event be considered suitable: (a) without prejudice to the provisions of the decree of the Minister of Economic Development dated 15 February 2019 on 'National guidelines for the mining decommissioning of platforms for the production of hydrocarbons at sea and related infrastructures', published in the Official Gazette no. 57 of 8 March 2019, disused oil platforms and the area 2 nautical miles away from each platform; b) ports, for wind power plants up to 100 MW of installed capacity, subject to any variant of the Port Master Plan, where necessary, to be adopted within 6 months from the submission of the request*".

It is noteworthy to mention, in this regard, that the European Commission decided to send reasoned opinions to (among other States) Italy (INFR(2021)2223) on failure to ensure proper implementation of Directive (EU) 2014/89 establishing a framework for maritime spatial planning, since Italy has not yet established and sent copies of its maritime spatial plans to the Commission.

B.4. Interim conclusions.

The foregoing remarks ultimately lead to the conclusion that the main need to be taken into account may not necessarily be to regulate further the exploitation of renewable energy at sea, but rather to rationalize the applicable (national) legislation, enhance the tools for the coordination of marine renewable energy projects with other legitimate uses of the sea (mainly through a careful and well-thought planning of their localization) and simplify the authorization process so as not to hinder their implementation.

* * *

SECTION C – *RELEVANT COMPARATIVE EXPERIENCES*

From a comparative point of view, different worldwide experiences will be taken into account, though without pretending to be exhaustive.

Starting from the experiences coming from the Asian continent, in Japan and China the regulation regarding MRE technologies is competence of the central government.
Japan's Ministry of Economy and the one of Infrastructure are authorised to designate sea areas for the developments of offshore MRE (so-called promotion areas). In light of the outcome of the consultation to be carried out with local stakeholders, they receive the environmental impact assessment (EIA) outcome from the project proponent. After this control, the Ministries are endowed with the power of issuing permissions for exclusive use of the selected area. The Japanese MRE policies are coordinated with the ones concerning marine conservation and fisheries: in particular, the State authority defines the areas in which not to build installations.

Similarly, in China the central authorities have the competence of managing power permits, rights to use sea areas and water activity licences; they also approve the EIA reports of the private enterprises. In order to issue such authorisations, the Chinese administrations shall consult other ministerial departments in order to obtain their opinion about topics such as environmental protection and fishery issues. In any case, project site selection should be consistent with marine zone management regulation, according to which ecological functional zones, ecological sensitive zones and ecological fragile areas are put under stricter controls.

As regards the North American legal framework, it has to be noted that US and Canada do not seem to offer an adequate legal framework for an efficient management of the offshore MRE technologies. The reasons of such inefficiency derive from the constitutional distribution of competences between federal and state level: in fact, it may happen that central and national regulations overlap. Moreover, a significant peculiarity (and a reason of further complexity) of both the US and the Canadian system is the presence of the Indigenous minority, whose institutions must have to be consulted during the development and the use of resources, and whose rights must be complied with in constructing a maritime offshore installation.

In Canada, due to the decentralized management of the MRE, not only there is uncertainty about the competent authority in order to start the authorisation procedure, but also there is a huge number of licences to be asked for. All those licences are provided for by different Canadian administrations (i.e. federal/provincial environmental approval, federal/provincial seabed authorisation, provincial constructions, municipal permits). Furthermore, private developer must comply with the legislation concerning protection of fish and bird species, navigation and safety of energy projects, thus requiring other permits.

Notwithstanding the constitutional separation of competences, also in the US, federal and state authorities involved are not coordinated among each other. It must be noted, at least, that an effort here comes from the creation, at the central level, of the Bureau of Ocean Energy Management. This federal entity, although not being a one-window committee, governs the development of MRE technologies on the outer continental shelf. The procedure before it deals with planning, leasing, site assessment and construction of the MRE. The bureaucratical burden is such that the planning and leasing stages alone take two years each. On the other side, the federal States have competences over

the internal and territorial waters: here, each of them has adopted an MSP in order to manage the offshore MRE development within the 12 nautical miles.

Within the European context, authorization procedures significantly differ from State to State, as already highlighted. One of the most efficient countries from the administrative point of view is by all means Denmark. Here, what characterizes the offshore systems of MRE (in particular the offshore wind farms) is the one-stop shop approach, thanks to which only one national entity manages the procedure of entrustment: this is the Danish Energy Agency (DEA). There are basically two ways for developers in Denmark to acquire the licenses and permits needed to construct offshore projects. One way is through the DEA formal tender process: a specific maritime area is identified, and applicants quote a price based on the expected kilowatts per hour they will generate. Alternatively, developers may take the initiative to propose their own location and size for an offshore project through the open-door procedure. In both cases, only four licenses are required: the license to conduct a pre investigation (which allows enterprises to research the construction of a potential plant within the limits of the licence itself), one to construct the installations, one to exploit the wind power, and an authorization to produce electricity.

We can find a similarly expeditious procedure regarding the construction of MRE plants – particularly referred to the wind technologies – within the UK's legal order. The UK has a centralized and integrated policy regime for awarding seabed rights to the successful bidder. Despite the tender process being multi-step, there is only one primary body involved: the Crown Estate. This is a special real estate business created by legislation that manages development of the UK seabed, up to 12 n.m. At a first stage, the Crown Estate preselects the viable areas and carries out consultations with the stakeholders. Following consultation, the so-called Offshore Wind Leasing Round (OSW Round) take place by releasing publicly the areas. These areas become available for tender submissions. After a transparent and clear process, the chosen developers, invited to submit further plans, will be the preferred bidders.

In the light of the above, it appears to be confirmed that the main global problem for the construction of renewable energy plants is to ensure streamlined and at the same time transparent procedures. This difficulty, of difficult resolution for federal countries such as the US and Canada, seems to have been successfully addressed in Denmark and the UK.

* * *

SECTION D – *IDENTIFICATION OF POTENTIALLY INTERESTING CASE-STUDIES*

Based on the overview of the relevant legal framework achieved through the initial recognition of the state of the art conducted in the first part of the project, the practical implications involved in the approval and development of a marine renewable energy project should be further assessed by taking into account specific projects.

In this regard, the website of the Ministero dell'Ambiente e della Sicurezza Energetica provides a list of the approval procedures where – with regard to every project under approval (or already approved)

– it is possible to access the technical documents as well as the observations submitted by the interested stakeholders.

* * *

SECTION E – *POTENTIALLY INTERESTED STAKEHOLDERS*

Potentially interested stakeholders might be identified in 1) the economic operators interested in developing marine renewable energy projects (the case studies highlighted in the previous section might offer in this regard an interesting list of operators that are already engaged in such activity); 2) the local communities living on the coasts, which are affected by the positive (in terms, for instance, of occupation and economic development) and negative (in terms, *e.g.*, of potential environmental impact) externalities of the projects; 3) the economic operators engaged in activities that might be affected by the development of marine renewable energy projects, such as fishery, activities related to tourism and shipping companies.

* * *

SECTION F – *INVOLVED INSTITUTIONS*

Due to the different competences and interests involved in the approval and development of marine renewable energy projects all levels of institutions are involved and potentially interested in the results of the research: municipal, regional and State administrations (Ministry for the Environment and Protection of Land and Sea; Ministry for Civil Protection and Sea Policy; Ministry of Defence; Ministry of Economic Development).

* * *

SECTION G – *TOOLS FOR THE INVOLVEMENT OF CIVIL SOCIETY*

With a view to ensuring an adequate involvement of the civil society, the Genova Blue District might provide a very useful tool. The Genova Blue District is a district dedicated to the Blue Economy that integrates the maritime chain, hi-tech, enterprise and tourism and acts as an engine for the development of the city of Genoa. It is a nerve centre for the entire Blue Economy, not only related to the port but also to Genoa's entire maritime and logistics chain. The University of Genoa is among its partners, together with many other authorities and institutions, such as the Municipality of Genoa, ISPRA (Istituto superiore per la protezione e la ricerca ambientale), IIT (Istituto Italiano di Tecnologia), CNR (Consiglio Nazionale delle Ricerche). Dissemination and participation of young people and citizens falls within its mission.

* * *

SECTION H - *BIBLIOGRAPHY*

Here below a selection of the relevant bibliography is provided.

H.1. BOOKS

Andreone G. (a cura di), *The Future of the Law of the Sea: Bridging Gaps Between National, Individual and Common Interests*, Springer, 2017.

Brears R. C., *Developing the Blue Economy*, Springer, 2021.

Guéguen-Hallouët G., *Les energies marines renouvelables en droit français principaux enjeux juridiques*, in *Meio ambiente marinho e direito: exploração e investigação na zona costeira, na plataforma continental e nos fundos marinhos* (Vol. I), Juruá Editora, 2015.

Johansen E., Busch S. V., Jakobsen I. U., *The Law of the Sea and Climate Change: solutions and constraints*, Cambridge University Press, 2021.

Jung D., *The 1982 Law of the Sea Convention and the Regulation of Offshore Renewable Energy Activities within National Jurisdiction*, Brill Nijhoff, 2023.

Müller H. K., *A legal framework for a transnational offshore grid in the North Sea*, Cambridge, 2016.

O'Hagan A. M., *Regulation of Marine Renewable Energy*, in R. Warner, S. Kaye, *Routledge Handbook of Maritime Regulation and Enforcement*, Routledge, 2016.

Schneider F., *Les énergies marines renouvelables : approche juridique en droit international européen et comparé*, Editions A. Pedone, 2015.

Van Hende, K., *Offshore wind in the European Union: towards integrated management of our marine waters*, Wolters Kluwer Law & Business: Kluwer Law International, 2015.

Woolley O., *Renewable energy law*, Oxford, 2023.

H.2. PAPERS

Apolonia M (et al.), *Legal and Political Barriers and Enablers to the Deployment of Marine Renewable Energy*, in *Energies*, 2021.

Batra M., Bafna N., *Renewable Energy: The WTO's Position on Local Content Requirements*, in *Energy Law Journal*, 2018.

Boillet N., *Offshore Renewable Energy Planning in French Law: towards an integrated process?*, in *Journal of Physics: Conference Series*, 2020.

Boillet N., Guéguen-Hallouët G., *A Comparative Study of Offshore Renewable Energy Legal Frameworks in France and the United Kingdom*, in *Ocean Yearbook Online*, 2016.

Boyes S. J., Elliott M., *Marine legislation – The ultimate 'horrendogram': International law, European directives & national implementation*, in *Marine Pollution Bulletin*, 2014.

Bradbrook A. J., *The development of a legislative framework for renewable energy and energy conservation*, in *Renewable Energy*, 1996.

Bruce S., *International Law and Renewable Energy: Facilitating Sustainable Energy for All?*, in *Melbourne Journal of International Law*, 2013.

Chang Y-C., Wang N., *Legal system for the development of marine renewable energy in China*, in *Renewable and Sustainable Energy Reviews*, 2017.

Chircop A., L'Esperance P., *Functional Interactions and Maritime Regulation: The Mutual Accommodation of Offshore Wind Farms and International Navigation and Shipping*, in *Ocean Yearbook Online*, 2016.

Citelli M., Barassi M., Belykh K., *Renewable Energy in the International Arena: Legal Aspects and Cooperation*, in *Groningen Journal of International Law*, 2014.

Cottier T., *Renewable Energy and WTO Law: More Policy Space or Enhanced Disciplines?*, in *Renewable Energy Law and Policy Review*, 2014.

Cudennec A., *The European Legal Framework for Marine Renewable Energies*, in *Ocean Yearbook Online*, 2016.

Doelle M., *Role of Strategic Environmental Assessments in Energy Governance: A Case Study of Tidal Energy in Nova Scotia's Bay of Fundy*, in *Journal of Energy and Natural Resources Law*, 2009.

Elsner P., Suarez S., *Renewable energy from the high seas: Geo-spatial modelling of resource potential and legal implications for developing offshore wind projects beyond the national jurisdiction of coastal States*, in *Energy Policy*, 2019.

Flannery W. (et al.), *Evaluating conditions for transboundary Marine Spatial Planning: Challenges and opportunities on the island of Ireland*, in *Marine Policy*, 2015.

Goodman C., *Harnessing the Wind Down Under: Applying the UNCLOS Framework to the Regulation of Offshore Wind by Australia and New Zealand*, *Ocean Development & International Law*, 2023.

Griset T. J., *Harnessing The Ocean's Power: Opportunities In Renewable Ocean Energy Resources*, in *Ocean and Coastal Law Journal*, 2010.

Guerra F., *Mapping offshore renewable energy governance*, in *Marine Policy*, 2018.

Hadžić N., Kozmar H., Tomić M., *Offshore renewable energy in the Adriatic Sea with respect to the Croatian 2020 energy strategy*, in *Renewable and Sustainable Energy Reviews*, 2014.

Heffron R. J. (et al.), *A Treatise for Energy Law*, in *Journal of World Energy Law and Business*, 2018.

Heffron R. J., McCauley D., *The concept of energy justice across the disciplines*, in *Energy Policy*, 2017.

Hutchins T. E., *Crafting an International Legal Framework for Renewable Energy on the High Seas*, in *Environmental Law*, 2021.

Kerr S., Colton J., Johnson K., Wright G., *Rights and ownership in sea country: implications of marine renewable energy for indigenous and local communities*, in *Marine Policy*, 2015.

Kojima C., *Japan Legislation on Marine Renewable Energy*, in *Asia-Pacific Journal of Ocean Law and Policy*, 2020.

Leary D., Esteban M., *Climate Change and Renewable Energy from the Ocean and Tides: Calming the Sea of Regulatory Uncertainty*, in *International Journal of Marine and Coastal Law*, 2009.

Leary D., Esteban M., *Renewable Energy from the Ocean and Tides: A Viable Renewable Energy Resource in Search of a Suitable Regulatory Framework*, in *Carbon & Climate Law Review*, 2009.

Long R., *Harnessing Offshore Wind Energy: Legal Challenges and Policy Conundrums in the European Union*, in *The International Journal of Marine and Coastal Law*, 2014.

Lund N. J., *Renewable Energy as a Catalyst for Changes on the High Seas Regime*, in *Ocean and Coastal Law Journal*, 2016.

McDonald S., VanderZwaag D. L., *Renewable Ocean Energy and the International Law and Policy Seascape: Global Currents, Regional Surges*, in *Ocean Yearbook Online*, 2015.

Oniemola P. K., *International Law on Renewable Energy: The Need for a Worldwide Treaty*, in *German Yearbook of International Law*, 2013.

Paterson J. (et al.), *Offshore wind installation vessels – A comparative assessment for UK offshore rounds 1 and 2*, in *Ocean Engineering*, 2018.

Portman M. E., *Marine Renewable Energy Policy: Some US and International Perspectives Compared*, in *Oceanography*, 2010.

Quero García P., García Sanabria J., Chica Ruiz J. A., *Blue energy and marine spatial planning in Southern Europe*, in *Energy Policy*, 2020.

Quero García P., García Sanabria J., Chica Ruiz J. A., *Marine renewable energy and maritime spatial planning in Spain: Main challenges and recommendations*, in *Marine Policy*, 2021.

Ramos V., *Legal framework of marine renewable energy: A review for the Atlantic region of Europe*, in *Renewable and Sustainable Energy Reviews*, 2021.

Robertson L. M., Dorreen M. J., Ali Raza M., *Harnessing Offshore Wind in Canada: The Regulatory Landscape for Offshore Wind Development and Lessons Learned from the United Kingdom, Denmark, and the United States*, in *Ocean Yearbook Online*, 2023.

Romeo M., *La disciplina delle energie rinnovabili che coinvolgono ambiente, agricoltura e paesaggio, tra Stato e Regioni*, in *Diritto e Giurisprudenza Agraria Alimentare e dell'Ambiente* (rivistadga.it), 2023.

Satir M., Murphy F., McDonnell K., *Feasibility study of an offshore wind farm in the Aegean Sea, Turkey*, in *Renewable and Sustainable Energy Reviews*, 2018.

Severance A., Sandgren M., *Flagging the Floating Turbine Unit: Navigating Towards a Registerable, First-Ranking Security Interest in Floating Wind Turbines*, in *Tulane Maritime Law Journal*, 2014.

Soria-Rodríguez C., *The European environmental regulation of marine renewable energies*, in *Review of European, Comparative & International Environmental Law*, 2020.

Soria-Rodríguez C., *The international regulation for the protection of the environment in the development of marine renewable energy in the EU*, in *Review of European, Comparative & International Environmental Law*, 2019.

Soukissian T. H. (et al.), *Marine Renewable Energy Clustering in the Mediterranean Sea: The Case of PELAGOS Project*, in *Frontiers in Energy Research*, 2019.

Soukissian T. H. (et al.), *Marine Renewable Energy in the Mediterranean Sea: Status and Perspectives*, in *Energies*, 2017.

Spadaro N., *L'eolico offshore: difficoltà procedurali interne e spunti per una riflessione comparativa con la Gran Bretagna*, in *Rivista Giuridica dell'Ambiente*, 2022.

Thaler J., *Fiddling as the World Floods and Burns: How Climate Change Urgently Requires a Paradigm Shift in the Permitting of Renewable Energy Projects*, in *Environmental Law*, 2012.

Todd P., *Marine renewable energy and public rights*, in *Marine Policy*, 2012.

Toroa N., Robles P., Jeldres R. I., *Seabed mineral resources, an alternative for the future of renewable energy: A critical review*, in *Ore Geology Review*, 2020.

Walters T., Ohlman J., *Decommissioning In The United Kingdom*, in *Shipping Law Review*, 2022.

Wang S., Yuan P., Li D., Jiao Y., *An overview of ocean renewable energy in China*, in *Renewable and Sustainable Energy Reviews*, 2011.

Woolley O., *Ecological Governance for Offshore Wind Energy in United Kingdom Waters: Has an Effective Legal Framework Been Established for Preventing Ecologically Harmful Development?*, in *The International Journal of Marine and Coastal Law*, 2015.

Wright G., *Regulating marine renewable energy development: a preliminary assessment of UK permitting processes*, in *Underwater Technology*, 2014.

Wright G., *Regulating wave and tidal energy: An industry perspective on the Scottish marine governance framework*, in *Marine Policy*, 2016.

Wright G., *Strengthening the role of science in marine governance through environmental impact assessment: a case study of the marine renewable energy industry*, in *Ocean & Coastal Management*, 2014.

Young M., *Building the Blue Economy: The Role of Marine Spatial Planning in Facilitating Offshore Renewable Energy Development*, in *International Journal of Marine and Coastal Law*, 2015.

H.3. PAPERS IN COLLECTIVE BOOKS

P. Babie P., Leadbeter P., *International Energy Law: An Emerging Academic Discipline*, in Wawryk A., *Law as Change: Engaging with the Life and Scholarship of Adrian Bradbrook*, University of Adelaide Press, 2014.

Chang Y-C., *The Global Energy Interconnection Initiative and the Development of Marine Renewable Energy in China–Legal Aspects*, in Zou K., *The Belt and Road Initiative and the Law of the Sea*, Brill Nijhoff, 2020.

Daborn G. R., Viehman H., Redden A. M., *Marine Renewable Energy in Canada: A Century of Consideration and Challenges*, in *The Future of Ocean Governance and Capacity Development - Essays in Honor of Elisabeth Mann Borgese (1918-2002)*, Brill, 2018.

Giannopoulos N., *The proliferation of offshore renewable energy in European seas: the regulatory challenges of emerging technologies for EU environmental law*, in Weishaar S. E., De Graaf K. J., *The Future of Environmental Law: Ambition and Reality*, Edward Elgar Publishing, 2023.

Goettsche-Wanli G., *Sustainable Production of Offshore Renewable Energy: A Global Perspective*, in Kotzur M. (et al.), *Sustainable Ocean Resource Governance: Deep Sea Mining, Marine Energy and Submarine Cables*, Brill Nijhoff, 2018.

Long R., *Harnessing Offshore Wind Energy: Legal Challenges and Policy Conundrums in the European Union*, in Bankes N., Trevisanut S., *Energy from the Sea: An International Law Perspective on Ocean Energy*, Brill Nijhoff, 2015.

Park S. W., Lee C. M., *Ocean Energy Development in Response to the Convention on Climate Change: The Case of Korea*, in Schofield C. H., Lee S., Kwon M-S., *The Limits of Maritime Jurisdiction*, Brill Nijhoff, 2014.

Trevisanut S., *Unconventional Lawmaking in the Offshore Energy Sector - Flexibilities and Weaknesses of the International Legal Framework*, in Klein N., *Unconventional lawmaking in the law of the sea*, 2022.

H.4. INSTITUTIONAL ACTS

Direzione Generale Archeologia, Belle Arti e Paesaggio, *Parere sulla realizzazione della nuova diga foranea del porto di Genova*, 2021.

EU Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Blue Energy – Action needed to deliver on the potential of ocean energy in European seas and oceans by 2020 and beyond* (2014).

EU Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - An EU Strategy to harness the potential of offshore renewable energy for a climate neutral future*, 2020.

EU Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Delivering on the EU offshore renewable energy ambitions* (2023).

EU Commission, *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – European Wind Power Action Plan* (2023).

EU Directive 2014/89 of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning.

International Court of Justice, Alleged Violations of Sovereign Rights and Maritime Spaces in the Caribbean Sea (Nicaragua v. Colombia), Judgment of 21 April 2022.

UN General Assembly, *Oceans and the law of the sea* (Report of the Secretary-General), 4 April 2012.

UN General Assembly, *Draft report of the intergovernmental conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction*, 2022.

H.5. THESIS, LECTURES, REPORTS AND WORKSHOPS

Candidate 9104, *Conflict of Norms in International Law: How to Seek Coexistence Between States' Right to Renewable Energy and States' Trade Obligations?*, 2017 (Master Thesis).

Banet C., *Renewable energy: international regulation and international trade law*, 2016 (Lecture).

IRENA, *Offshore Renewables: an Action Agenda for Deployment - Offshore Contribution to the G20 Presidency*, 2021 (Report).

J. L. Batongbacal, *Marine Renewable Energies and Distributive Justice in Sustainable Development* (Discussion Panel Presentation on Marine Renewable Energies: Types, Uses and Role in Sustainable Development, at the 13th United Nations Open-Ended Informal Consultation Process on Oceans and Law of the Sea, United Nations, 28 May 2012).

LEGAMBIENTE, Scacco matto alle fonti rinnovabili – Tutta la burocrazia che blocca lo sviluppo delle rinnovabili favorendo gas e finte soluzioni, 2021 (Report).

Melnychenko M., *Marine Renewable Energy in the Areas Beyond National Jurisdiction: International Regulation and Legal Challenges*, 2021 (Master thesis)

Norsk Industri AS, *Regulators and legislation for offshore wind in selected countries*, 2021 (Report).

Oniemola P. K., *A Case for an International Legal Regime on Renewable Energy*, 2011 (Seminario)

Ramboll, Floating Offshore Wind – Application Of Standards, Regulations, Project Certification & Classification – Risks And Opportunities, 2021 (Report).

SET Plan Implementation Working Group for Offshore Wind, *2nd SET Plan Implementation - Plan for offshore wind March* 2022.

Firmato digitalmente da:
Simone Carrea
Data: 03/06/2024 11:22:59