

The Environmental Legal Framework for the Development of Blue Energy in Europe

Enrique J. Martínez Pérez

1 Introduction

As agreed by the Heads of State and Government of the Member States of the European Council in March 2007, the European Union set itself the target of using energy from renewable sources to cover 20% of the European Union's total energy consumption and 10% of energy consumption in the transport industry by 2020.¹ According to the latest European Commission reports, these targets are well on the way to being reached, for in 2014 renewable energy covered an estimated share of 15.3% of gross final consumption, close to 8.3% more than in 2004.² Hydropower is still the production leader, but it is losing ground to wind power (27.5%), biomass and biogas (16.2%), and solar power (10%).³ The latter accounts for only 0.5% of

This article was undertaken within the framework of the research project “La Unión Europea y el Derecho del Mar” (DER2013-45995-R) funded by the Spanish Ministry of Economy and Competitiveness and the COST Action IS 1105, supported by COST (European Cooperation in Science and Technology).

¹Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, OJ L 140, 5 June 2009.

²Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Renewable energy progress report. COM (2015) 293 final, 15 June 2015.

³There are at present 128.8 GW of installed wind power capacity, of which 120.6 GW are at onshore wind farms, and 8 GW, at offshore wind farms (European Wind Energy Association (2015). Wind in power: 2014 European statistics. <http://www.ewea.org/fileadmin/files/library/publications/statistics/EWEA-Annual-Statistics-2014.pdf>. Accessed 19 Nov 2015).

E.J. Martínez Pérez (✉)

Faculty of Law, University of Valladolid, Valladolid, Spain

e-mail: enriquejesus.martinez@uva.es

the EU's total electricity consumption,⁴ although by 2020 installed capacity is anticipated to reach 43 GW, which would be 3% of total consumption.⁵ Nevertheless, the seas offer us other sources of clean energy, sources that are still in an embryonic stage yet can, with public support and technological improvements, achieve the same kind of development as wind power.

Waves, tides, and temperature and salinity differences can be tapped for energy. These new ocean energy sources enjoy the same advantages as wind energy: they help reduce greenhouse gas emissions, they boost energy security, they favor industrial and technological developments, and they are a major source of jobs in high-unemployment areas. But they also face important challenges, such as the high costs of technology, the development of grid connections for renewable marine energy, and the issue we will address here, uncertainty over the environmental impact of the new installations and their compatibility with other maritime activities. So when projects of this kind are introduced, rigorous assessments of their environmental effects must be run to identify the impacts of projects on protected areas, on plants and animals, and on other uses, such as navigation. These assessments must take account of EU law in the framework of biodiversity policy and integrated maritime policy, pay special attention to the rules of maritime spatial planning and marine strategy, and not overlook the international legal obligations established by international environmental law and marine law.

2 The Impact of the Law of the Sea: Maritime Safety Issues

"Ocean energy" refers to energy that comes from exploiting waves, tides, and temperature and salinity differences.⁶ Most installations and projects being tested are located in maritime zones under the sovereignty of coastal States (encompassing internal waters, archipelagic waters, and territorial seas), although technological strides such as those made with wind energy have enabled ocean

⁴There are just 84 offshore wind farms scattered over 11 European countries (European Wind Energy Association (2016). The European offshore wind industry -key trends and statistics 2015. <http://www.ewea.org/fileadmin/files/library/publications/statistics/EWEA-European-Offshore-Statistics-2015.pdf>. Accessed 15 Feb 2016).

⁵Communication 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*, COM (2014) 8 final, 20 January 2014, p. 4.

⁶The Commission has identified four forms of ocean energy: "Wave energy depends on wave height, speed, length, and the density of the water. Tidal stream energy is generated from the flow of water in narrow channels whereas tidal range technologies (or 'tidal barrages') exploit the difference in surface height in a dammed estuary or bay. Ocean energy can also be generated from temperature differences between surface and sub-surface water while salinity gradient power relies on the difference in salinity between salt and fresh water" (European Commission, *supra* note 5, at 2).

energy installations to be developed in areas much further away from the coast, where States does not enjoy sovereignty as such but a more limited set of “sovereign rights.”⁷

The United Nations Convention on the Law of the Sea (UNCLOS) does not set many conditions on the development of blue energy in areas under the sovereignty or jurisdiction of States. On the one hand, a State extends its sovereignty across a belt of sea adjacent to its territory out to a maximum distance of 12 miles (territorial sea), and therefore, although no such express mention is made, a State may establish marine installations there by virtue of its sovereignty.⁸ On the other, States have the same right in the exclusive economic zone, an area adjacent to the territorial sea and measuring a maximum of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured. Under article 56, a coastal State is expressly acknowledged as having sovereign rights in its exclusive economic zone to perform “other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds,” plus, according to article 60, “the exclusive right to construct and to authorize and regulate the construction, operation and use of . . . installations and structures for the purposes provided for in article 56.”

In the exclusive economic zone, unlike in other maritime zones, exercising such rights requires an express proclamation. Moreover, territorial or material limitations can be placed on the rights (called *minoris generis* or *sui generis* zones).⁹ Spain, for example, initially limited its exclusive economic zone to the waters of the Atlantic Ocean and the Bay of Biscay.¹⁰ In the Mediterranean Sea, however, due to the special characteristics of that area, Spain, like other countries such as Algeria, Libya, and Malta, established a Fishing Protection Zone in which the country only claimed sovereign rights for the preservation of living marine resources and the management and control of fishing activities.¹¹ Then there is the case of France and Italy, which established Ecological Protection Zones with powers for the preservation of the marine environment.¹² Less usual in practice is to find state declarations limiting a state’s power to energy activities. One of the few examples was the Renewable Energy Zone declared by the United Kingdom in section 84 of the Energy Act 2004, in which the State vests itself with exclusive rights for the production of water and wind energy under Part V of the Montego Bay

⁷See Cottier (2015), p. 133.

⁸Article 2.

⁹See Andreone (2015), p. 163.

¹⁰Act 15/1978, of 20 february 1978, on Economic Exclusive Zone (BOE núm. 46, 23 February 1978), first final provision.

¹¹Royal Decree 1315/1997, of 1 August 1997, establishing a Fisheries Protection Zone in the Mediterranean Sea (BOE núm. 204, 26 August 1997), article 2.

¹²See Papanicopolulu (2007), pp. 381–398.

Convention.¹³ Recently, however, many of these States have transformed their *minoris generis* zones to economic exclusive zones.¹⁴

States have freedom to construct installations on the high seas as well, albeit subject to the provisions of Part VI of the Convention, which establishes the legal regime governing the continental shelf. On the continental shelf, unlike in the exclusive economic zone, the rights of the coastal State exist *ipso facto* and *ab initio*, as may be gathered from article 77 of the Convention. As a consequence, States likewise exercises sovereign rights for the exploitation of the natural resources on the seabed and marine subsoil, without the need of occupation or express proclamation. But here, unlike in the exclusive economic zone, the natural resources only include mineral resources and other nonliving resources. Wind and water are not mentioned. It is true, however, that article 80 contains a clause referring back to article 60, allowing the construction of installations and structures on the continental shelf, but the referral in article 80 includes the expression *mutatis mutandis*, namely “with the necessary changes,” which in our opinion means that the right is limited to the construction of installations for the stated purposes on the continental shelf, not in the exclusive economic zone. Although a broader interpretation could be argued, the point would be moot because, as we have just said, any State can declare an exclusive economic zone as such or a limited exclusive economic zone.

At any rate, the rights that States exercise in these marine areas are not absolute but are subject to certain limitations, especially where navigation is concerned. And the fact is that the energy installation can endanger maritime navigation safety if they are located or lie near regular routes or maritime traffic separation schemes. As regards the territorial sea, States can establish safety zones prohibiting or restricting navigation around power plants or structures.¹⁵ Nonetheless, the right of innocent passage of all ships must be guaranteed as well.¹⁶ Alternative sea lanes must therefore always be ensured¹⁷ because otherwise the exercise of the right of innocent passage would be denied or hindered, and article 24 of the Montego Bay Convention would be violated. At all events, coastal States may adopt navigation laws and regulations and regulate maritime traffic under very few limitations; they need only give due publicity and take into account the recommendations of the

¹³See Scott (2006), pp. 89–118.

¹⁴See Andreone and Cataldi (2014), pp. 226–230.

¹⁵Article 21. Spain, for example, issued a prohibition in advance against marine energy farms in areas where there are maritime traffic separation schemes and zones adjacent thereto, via Royal Decree 1028/2007 of 20 July concerning the procedure for processing applications for authorization for electricity generation facilities in the territorial sea (BOE núm. 183, 1 August 2007, second additional provision).

¹⁶Article 17.

¹⁷Article 22.

competent international organization.¹⁸ In this respect, Regulation V/8 (Routeing) of the International Convention for the Safety of Life at Sea (London, 1 November 1974)¹⁹ acknowledges that the International Maritime Organization (IMO) is the only one recognized as creating guidelines, criteria, and rules applicable to maritime traffic routeing, although the governments concerned hold the responsibility of taking the initiative,²⁰ and rule 1 paragraph d) of the International Regulations for Preventing Collisions at Sea (London, 20 October 1972) likewise establishes that the IMO is the organization in charge of adopting traffic separation schemes (TSS). The main rule on this subject is IMO Resolution A.572 (14) on “General Provisions on Ships’ Routeing,” which recommends following IMO guidelines on TSS establishment and even submitting schemes to the IMO for approval.²¹ Otherwise, traffic separation schemes must at least be made known in nautical publications and charts.²²

In the exclusive economic zone, States can also establish safety zones around installations to safeguard navigation when they see fit. All ships must respect these safety zones.²³ Their breadth depends on the nature and functions of the installations but shall not exceed a distance of 500 meters around them, except as authorized by generally accepted international standards or the recommendation of the competent international organization.²⁴ Safety zones are set in Resolution A.671(16) on “Safety Zones and Safety of Navigation Around Offshore Installations and Structures,” which includes an annex giving a series of guidelines for the correct reporting of all information about safety zones.²⁵ However, in no case can installations or structures be established, nor can safety zones be established around installations or structures, when they can interfere with the use of recognized sea lanes that are essential to international navigation.²⁶ IMO’s Resolution A.572 (14) also recommends not emplacing structures inside or near traffic separation schemes. Should no other emplacement be possible, permanent modifications of the schemes must nonetheless be submitted to the IMO for approval.²⁷

¹⁸Article 22.3. In that regard, Spain recently updated its legislation on navigation, establishing that the use of the maritime traffic systems “shall be mandatory for all ships once they have obtained the international approval and publication that may be necessary as appropriate. In any event, use of the maritime traffic systems may only be mandatory when located in internal waters or in the territorial sea and, in the event of approval by the International Maritime Organisation, within the exclusive economic zone” (Act 14/2014, dated 24 July, on maritime navigation, BOE núm. 180, 25 July 2014, article 30).

¹⁹Resolution MSC. 46 (65), adopted on 16 May 1995, annex 2.

²⁰See Birnie (1997), p. 34.

²¹Para. 3.12.

²²Para. 3.13.

²³Article 60.6.

²⁴Article 60. 4–5.

²⁵Adopted on 19 October 1989.

²⁶Article 60.7.

²⁷Para. 3.11.

3 The Integration of Ocean Energy in Maritime Spatial Plans

Ocean energy has to compete with other maritime interests and activities, including classic pursuits (such as fishing, navigation, maritime shipping, and oil and gas extraction) and more innovative activities (such as aquaculture). Many States have drawn up maritime space management plans where the different uses of the sea are regulated. However, most of them fail to include renewable energy activities.²⁸

Recently, however, has been adopted Directive 2014/89/EU of 23 July 2014²⁹ establishing a framework for maritime spatial planning, which will assist Member States to identify compatible uses within a given maritime space, thus precluding future conflicts, although they enjoy a broad margin of discretion to implement the obligations deriving from this directive. Most obligations are only procedural, not substantive.³⁰ In addition, the minimum requirements that all Member States must meet are in fact very few and highly abstract. In comparison with the initial proposal, which made it obligatory to carry out a clear *demarkation* of the marine space reflecting the actual and potential spatial and temporal distribution of activities,³¹ Member States are now only required to determine uses and activities on their maritime spatial plans (art. 8). That said, when Member States draw up their maritime spatial plans, they must always take account of land–sea interactions and environmental, economic, and social aspects and guarantee coherence between maritime planning and integrated coastal management strategies (art. 6).

In any case, as stated in article 1, the directive will contribute to “promoting the sustainable growth of maritime economies, the sustainable development of marine areas and the sustainable use of marine resources.” Moreover, it has a very wide scope of application since it applies to the marine waters of Member States, except for coastal waters. Therefore, as recognized in Directive 2008/56/EC, it includes waters, the seabed, and the subsoil where Member States exercise jurisdictional rights; as we have just seen, this is the territorial sea, the contiguous zone, the continental shelf, and the exclusive economic zone.³² But above all, and most importantly for our study, the uses and activities that must be taken into account include installations and infrastructure for the production of energy from renewable sources and undersea cable and pipeline routes.

²⁸See Long (2013), p. 37.

²⁹Council Directive (EU) 2014/89 establishing a framework for maritime spatial planning [2014] OJ L 257/135, 28 August 2014.

³⁰See Zervaki (2015), p. 106.

³¹COM (2013) 133, article 7.1.

³²Council Directive (EC) 2008/56 establishing a framework of Community action in the field of marine environmental policy (Marine Strategy Framework Directive) [2008] OJ L164/19, 25 June 2008, article 3. 1. a.

4 Environmental Impact Assessment

One of the most complicated stages in the development of renewable energies occurs at the assessment of the potential impact on the marine environment. The obligation to conduct an environmental impact assessment derives from different international law sources (treaty and custom), which determines the specific content and the spatial scope. Simultaneously, EU law has established further requirements to carry out an environmental assessment, as discussed below.

4.1 At the EU Level

Strategic planning is the first preventive instrument for reducing negative environmental impacts since it enables the States to decide on the capacity and location of renewable ocean energy projects. In Europe, strategic environmental assessment, which is regulated in Directive 2001/42/EC, is compulsory for all plans and programs concerning agriculture, forestry, fisheries, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use, and, more to the point for us, energy.³³ The deliverable is an environmental report that assesses aspects such as biodiversity, population, human health, fauna, flora, land, water, air, cultural heritage, and landscape.³⁴

The effects of installations on the population and human health are minimum since any site would lie far from populated areas and the energy would be clean. Nevertheless, people do not like how some energy projects change the landscape. Accordingly, although visual impact cannot be considered a strong enough argument to rule out offshore energy projects entirely along the coast, a wide strip along the coastline could be established as being area suitable with environmental restrictions.³⁵ Any project inside this area is required to undergo a further assessment of its environmental feasibility if there is any possibility that it might have certain negative effects. This assessment mandatorily entails a specific visual impact analysis for each project within the marine strip.³⁶ Unlike other energy projects,

³³Directive No 2001/42/EC of the EP and the Council on the assessment of the effects of certain plans and programmes on the Environment, [2001] OJ L 197/30, 21 July 2001, article 3 (2) (a). See Vazquez Gomez (2012), pp. 146–159.

³⁴Annex I.

³⁵In Spain, for example, identified some of the negative impacts of ocean energy installations in the *Strategic Environmental Study of the Spanish Coast for the Installation of Marine Wind Farms*, an assessment focusing on finding areas in the maritime public domain that qualify as marine installation sites. Zoning was done bearing in mind the potential perception that marine wind farms visible from the coast alter the landscape. Available at http://www.mityc.es/energia/electricidad/RegimenEspecial/eolicas_marinas/Documents/EEAL_parques_eolicos_marinos_Final.pdf. Accessed 8 Mar 2016.

³⁶In that regard, see OSPAR *Guidance on Environmental Considerations for Offshore Wind Farm Development*, ref. 2008-3, available at <http://www.ospar.org>. Accessed 7 Jul 2016.

such as offshore wind farm, ocean energy will in all probability be found more acceptable because many ocean energy devices (like underwater tidal power turbines) are entirely or partly submerged. Only some floating structures and installations requiring the construction of landscape-changing barriers may prove less welcome.

Another item to bear in mind at the start of any planning effort is where the grid access points are because if new infrastructure proves necessary, its environmental impact will have to be analyzed as well. Lack of cross-border grid interconnections is one of the reasons why there is so little harnessing of ocean energy. For that reason, the European Union has encouraged the development of cross-border grid connections to ensure a stable total supply of renewable energy to the grid and to enable this supply of energy to be marketed, thus improving its efficiency.³⁷ Infrastructure may cut across different maritime zones belonging to different States, so planning, authorization, and regulation issues remain in the hands of each Member State. Under UNCLOS, all States are entitled to lay submarine cables and pipelines in the exclusive economic zone (article 58) and on the continental shelf (articles 87 and 79.1). Nevertheless, the exercise of this right may be subject to some restrictions.

The coastal State can take measures for the prevention, reduction, and control of pollution from pipelines but not from submarine cables, nor can the coastal State's consent be required for the laying of submarine cables.³⁸ This difference in standards is due to the low environmental impact of damage at submarine cable installations.³⁹ Nevertheless, as the Convention does allow coastal States to take *reasonable measures* for the exploration of the continental shelf and the exploitation of their natural resources, some States argued that they can impose certain conditions on cable laying.⁴⁰ Furthermore, all States must comply with the laws and regulations adopted by the coastal State in the exclusive economic zone regarding the exploitation of natural resources and the protection and preservation of the marine environment, and these laws and regulations must in their turn respect the rights and duties of other States and be in accordance with the provisions of the Convention and other rules of international law.⁴¹ In the light of these provisions, many States (some of them EU Member States) have of late adopted legislation under which the legal procedure for cables and pipelines is the same, so that prior permits have to be obtained for cables as well, and there may even be fees or taxes to be paid.⁴²

³⁷Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions—*Offshore Wind Energy: Action needed to deliver on the Energy Policy Objectives for 2020 and beyond*, COM (2008) 768 final, 13 November 2008, para. 2.1.

³⁸Article 79 (2).

³⁹See Roeben (2013), p. 847.

⁴⁰See Ford-Ramsden, Davenport (2014), p. 148.

⁴¹Article 58 (3).

⁴²See Ford-Ramsden, Davenport (2014), pp. 148–151.

In accordance with article 79 paragraph 4 of the Montego Bay Convention, in contrast, before cables may enter the territory or territorial sea of a coastal State, authorization must be obtained from the coastal State, which can set conditions regarding the route of the cable. The coastal State also has jurisdiction over cables used with respect to structures built to tap ocean energy. Because the sovereignty of a State also extends to its territorial sea, the coastal State can demand compliance with national legislation before it grants permits and licenses. Lastly, in accordance with paragraph 5, when cables are laid, account must be taken of the cables already installed, and the possibility of their repair must not be hampered.

The second of the essential instruments of EU legislation is the environmental impact assessment regulated in Directive 2011/92/EU, applicable to public and private projects.⁴³ Renewable energy installations were not listed as such in the category of projects within the scope of Directive 85/337/EEC,⁴⁴ but much of the necessary construction work (that, by its nature, dimension or location has a major impact on the environment) was required to be assessed anyway because it qualified as a project in Annex II of the Directive.⁴⁵ This situation changed with the entry in force of the new Directive 97/11/EC, which expressly includes installations harnessing wind power for energy production in Annex II.⁴⁶ In these cases, Member States still enjoy a broad margin of discretion to decide if they have to carry out an environmental impact assessment, but they are obligated to determine whether the project is likely to have significant effects on the environment. This requirement extends to any change or expansion of an installation that is already authorized, executed, or in the process of being executed.⁴⁷

In any case, when Member States conduct *screening* (the assessment process to determine whether or not there are any significant effects on the environment, so as to decide whether or not a particular project requires an environmental impact assessment), they must always take account of the criteria established in Annex III, *inter alia*, the environmental sensitivity of the geographic areas that the installations may affect. Harm to the landscape would be a point in favor of the existence of environmental effects, but only, as Annex III expressly states, if it affects landscapes of historical, cultural, and/or archaeological significance. So this would seem to exclude subjective, aesthetic ideas about the beauty of the landscape of a given area.⁴⁸

⁴³Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, OJ L 26, 28 December 2012 (amended by directive 2014/52/EU, OJ L 124, 25 April 2014).

⁴⁴OJ L 175, 5 July 1985.

⁴⁵Case C-215/06, Commission v Ireland [2008] ECR I-4911, para 94.

⁴⁶Council Directive 97/11/EC of 3 March 1997 amending on the assessment of the effects of certain public and private projects on the environment, OJ L 73, 14 March 1997.

⁴⁷Case C-215/06, para. 108.

⁴⁸Opinion dated 22 January 2009 of Advocate-General J. Kokott in *Mellor* (C-75/08), para. 48–55.

4.2 *In a Cross-Border Context: The Obligation of Due Diligence*

New legal obligations arise when the planned activities may have cross-border impact. The Maritime Spatial Planning Directive has already endeavored to improve cross-border cooperation to harness the oceans as an energy source. It requires Member States whose waters are adjacent to consult and coordinate their plans with one another and with third countries.⁴⁹ True, the obligations in that respect are not given in any great detail.⁵⁰ The directive only states that such cooperation may take the form of existing regional institutional cooperation structures, networks, or structures of competent authorities or any other method, such as taking advantage of the framework for sea-basin strategies.⁵¹ And all that the directive says on cooperation with third countries is that regional institutional cooperation or existing international forums may be used.⁵²

Furthermore, as the International Court of Justice declared in the case of *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, a State would fail to comply with its obligation of due diligence, and the duty of vigilance and prevention that it implies, if the State did not undertake an environmental impact assessment on the potential effects of the projects. The Court considered it an obligation enshrined in general international law to carry out an environmental assessment whenever there is a risk that an industrial activity may have significant adverse impact in a cross-border context.⁵³ The Court moreover observed that such an assessment must be carried out before the activity goes into operation, although the activity's effects on the environment also have to be subjected to continuous monitoring throughout the project's life. However, the Court did recognize, as the International Law Commission did earlier in the 2001 *Draft Articles on Prevention of Transboundary Harm from Hazardous Activities*,⁵⁴ that general international law, as reflected in most prevailing international conventions, does not specify the scope or content of impact assessments. Thus, it falls to each State to determine the specific content of

⁴⁹Preamble, para 20, articles 11–12.

⁵⁰See Soininen (2015), pp. 193–195.

⁵¹Article 11.

⁵²Article 12.

⁵³*Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgement, 20 April 2010, ICJ Reports 2010, para. 204.

⁵⁴*Draft Articles on Prevention of Transboundary Harm from Hazardous Activities with commentaries*, Report of the International Law Commission on the work of its fifty-third session, Yearbook of the International Law Commission (2001-II), Part. 2, UN Doc. A/56/10, commentary on article 7. However, «such an assessment should contain an evaluation of the possible transboundary harmful impact of the activity. In order for the States likely to be affected to evaluate the risk to which they might be exposed, they need to know what possible harmful effects that activity might have on them. » (p. 159).

impact assessments through its own domestic law, taking account of the nature and magnitude of the proposed project and its possible adverse environmental impact.⁵⁵ The International Tribunal for the Law of the Sea took a step farther in its *Advisory Opinion on Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, considering that “The Court’s reasoning in a transboundary context may also apply to activities with an impact on the environment in an area beyond the limits of national jurisdiction; and the Court’s references to ‘shared resources’ may also apply to resources that are the common heritage of mankind.”⁵⁶ Consequently, this opinion opens up the possibility of extending said obligation beyond the mere cross-border sphere.

In the European context, there is a legal instrument containing more detailed procedural rules, the Convention on Transboundary Environmental Impact Assessment – the “Espoo (EIA) Convention” (Espoo, 25 February 1991).⁵⁷ An environmental assessment must be undertaken prior to any decision to authorize or undertake an activity, and each environmental assessment must contain at least the information in Appendix II (description of the planned activity, alternative solutions, corrective measures, etc.). In principle, this obligation concerns only the activities listed in Appendix I, which for now does not generically mention ocean energy. However, in their Decision III/7 (2004), the Parties to the Convention agreed to a second amendment to the Convention and revising the activities listed in Appendix I to include, *inter alia*, installations that harness wind power for energy production (wind farms).⁵⁸ The possibility of applying the terms of the Convention is also envisioned in any case where the parties involved agree to do so, if the proposed activities have a harmful transboundary impact due to their breadth, location (closeness to an international border), and long-distance effects.⁵⁹ So, for example, although cable laying is not one of the activities listed in Appendix I, the North Seas Countries’ Offshore Grid (NSCOGI) initiative, a forum for regional cooperation in energy matters whose collaboration was formalized in a Memorandum of Understanding in 2010,⁶⁰ considers that coordination of national processes to authorize transboundary infrastructure should be guided by the principles of the Espoo Convention.⁶¹

⁵⁵Para. 205.

⁵⁶*Responsibilities and obligations of States with respect to activities in the Area*, Advisory Opinion, 1 February 2011, ITLOS Reports 2011, para.148.

⁵⁷OJ C 104, 24 April 1992.

⁵⁸Text available at <http://www.unece.org/env/eia/about/amendment2.html>. Accessed 10 Apr 2016.

⁵⁹Article 2 (5) in conjunction Annex III.

⁶⁰The North Seas Countries’ Offshore Grid Initiative, Memorandum of Understanding, 3 December 2010. http://www.benelux.int/files/8113/9625/9202/MoU_NSCOGI.pdf. Accessed 10 Apr 2016.

⁶¹See Roeben (2013), p. 861.

5 Protection of Flora and Fauna

Another of the effects of the construction of installations of this type is the loss of marine habitat. Studies suggest that various species of marine animals and fish may be particularly vulnerable. The type and degree of impact are very much dependent upon a range of factors, such as location and design of the individual ocean energy developments. There are many international agreements that seek to protect and preserve marine ecosystems. In matters of ocean energy, the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar, 2 February 1971)⁶² is extremely relevant because its Parties accept the responsibility of safeguarding the coastal wetland areas used by waterfowl in their seasonal migration.⁶³ Account was also taken, although at another level of protection, of other areas protected by the Convention for the Protection of the Marine Environment of the North-East Atlantic, OSPAR (Paris, 22 September 1992),⁶⁴ the Convention on the Protection of the Marine Environment in the Baltic Sea Area, HELCOM (Helsinki, 9 April 1992), the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona, 16 February 1976⁶⁵), and the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (Barcelona, 10 June 1995⁶⁶).

Other marine species besides waterfowl, such as cetaceans, can be affected by installations built in marine zones that they inhabit or cross on their regular migration route. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 23 June 1979) has the objective of conserving migratory species throughout their area of natural distribution.⁶⁷ Under article V, States are obligated to make complementary agreements covering the whole of the area throughout which migratory species are distributed. One of them is the Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea, and Contiguous Atlantic Area (Monaco, 24 November 1996), whose objective is to maintain a favorable state of conservation in a set of threatened species.⁶⁸

⁶²Text available at http://www.ramsar.org/sites/default/files/documents/library/scan_certified_e.pdf. Accessed 8 Mar 2016.

⁶³Naturally, the Spanish authorities bore the Ramsar Convention strongly in mind when drawing up the procedure for the strategic assessment of the Spanish coast for the installation of marine wind farms. The Spanish authorities established a six-mile strip along the coastline around wetlands of international importance and catalogued it as a “no-go” zone, that is, a coastal zone not suitable for the installation of wind farms, because there the authorities have identified potential environmental effects incompatible with other marine environment uses that are considered to take priority (*Strategic Environmental Study of the Spanish Coast for the Installation of Marine Wind Farms*, *supra* note 35).

⁶⁴OJ L 104, 3 April 1998.

⁶⁵OJ L 240, 19 September 1977.

⁶⁶OJ L 322, 14 December 1999.

⁶⁷OJ L 210, 19 July 1982.

⁶⁸Text available at <http://www.accobams.org>. Accessed 20 May 2016.

There are also strict obligations arising under EU law. Directive 92/43/EEC on Habitats⁶⁹ and Directive 79/409/EEC on Birds⁷⁰ established a network of protected marine areas of Community importance (Natura 2000) resembling protected terrestrial areas but with less intensity. Both directives⁷¹ explicitly stated that they were to apply in the European territory of the Member States. Against the opinion of the European Commission, this stipulation was at first interpreted restrictively by some States that considered that their obligations should be limited to their internal waters and territorial seas only. However, the 2001 Council Meeting on Fisheries in Luxembourg⁷² urged Member States to apply the directives in the exclusive economic zone, as some domestic courts had already instructed them to do. Years later, this position was also backed by the Court of Justice itself in case *Commission/United Kingdom* (C-6/04) of 20 October 2005.⁷³

Actually, the marine component of the Natura 2000 network is not yet complete, due fundamentally to the fact that scientific knowledge of marine species and their habitats is less abundant. In December 2013, there were only 2292 sites of Community importance (SCI) and 983 special protected areas (SPA) in marine waters, which contrasts sharply with the 26,410 zones in the terrestrial Natura network.⁷⁴ In this sense, it is important for the Member States to designate protected marine areas as soon as possible and to approve their management plans, to put an end to the legal uncertainty about the suitability of ocean energy installations.

⁶⁹Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L 206, 22 July 1992. The Strait of Gibraltar, which is included in the geographical scope of the agreement, is one of those protected areas. Spanish authorities are aware of this and thus classified the strait as a “wind no-go area” in the Strategic Environmental Study mentioned above. Not so other zones, such as the Mediterranean; although extremely important for cetaceans and other marine species, they are difficult to exclude in the strategic phase, since migration routes and critical areas were established on the basis of very extensive delimitations. Thus, the most advisable course there is to postpone environmental viability and authorization to the project impact assessment phase (*Strategic Environmental Study of the Spanish Coast for the Installation of Marine Wind Farms*, *supra* note 35).

⁷⁰Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds, OJ L 103, 25 April 1979.

⁷¹Article 1 and 2.

⁷²Annex, 2344th Council meeting- fisheries -Luxembourg, 25 April 2001, doc. 8077/01, para 15.

⁷³Para. 115–117. As indicated in detail by the Opinion of Advocate General Kokott: «While the Habitats Directive admittedly contains no express rule concerning its territorial scope, it is consonant with its objectives to apply it beyond coastal waters. In accordance with Article 2(1), the directive is meant to contribute towards ensuring bio-diversity through the conservation of natural habitats and of wild fauna and flora in the European territory of the Member States to which the Treaty applies. This objective supports the conclusion that the area within which the directive applies coincides with that of the Treaty. In accordance with the aforementioned case-law, the area within which the Treaty applies is not limited to the territorial waters. Also, the directive protects habitats such as reefs and species such as sea mammals which are frequently, in part even predominantly, to be found outside territorial waters» (Opinion dated 9 June 2005 of Advocate-General J. Kokott in *Commission/United Kingdom* (C-6/04) para 132).

⁷⁴European Commission (2013) *Natura 2000 Barometer*. http://ec.europa.eu/environment/nature/natura2000/barometer/index_en.htm. Accessed 22 Jun 2016.

If a natural habitat is eventually protected by the EU under the Natura 2000 network, either as a special area of conservation under Directive 92/43/EEC on Habitats or as a special protection area for birds under Directive 79/409/EEC on Birds, Member States are obligated to take the necessary measures to avoid natural habitat degradation and disturbances to species in the area. The directives do not in principle prohibit new projects or activities (such as energy-producing facilities) in Natura 2000 network. If the infrastructure could affect protected sites, however, the appropriate assessment would have to be carried out.⁷⁵ To this effect, the European Commission has published a series of instructions giving interpretative and methodological guidance on how to conduct the assessment called for in article 6(3) and (4) of Directive 92/43/EEC on Habitats. The process consists basically of four phases: description of the elements of the project, the conservation objectives, the effects on the main species and habitats, and the possible corrective measures.⁷⁶ During the process, it is quite normal for scientific doubts and other uncertainties to arise about the effects of the new installations (e.g., the effects of the noise they make). If so, the precautionary principle has to be applied, as advised in some international recommendations on the subject, such as those prepared by the Convention on the Conservation of Migratory Species of Wild Animals.⁷⁷ But even when it is concluded that environmental damage does exist, Member States may authorize projects anyway if there are no alternative solutions or if there are overriding reasons of public interest, although in that event Member States are obligated to create or improve another habitat elsewhere as a compensating measure.⁷⁸

6 Marine Environmental Protection

Part XII of the United Nations Convention on the Law of the Sea establishes a general obligation on all States to protect and preserve the marine environment,⁷⁹ although, as we have just seen, other principles and general rules can be found

⁷⁵See European Commission (2011), *Wind energy developments and Nature 2000* (Guidance document).

⁷⁶See European Commission (2001). *Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf. Accessed 22 Jun 2016.

⁷⁷Resolution 7.5, *Wind Turbines and Migratory Species*, adopted by the Conference of the Parties at its Seventh Meeting (Bonn, 18-24 September 2002), UNEP/CMS/Res. 7.5.

⁷⁸Article 6. 4. See also European Commission (2007), *Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission*, available at http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/new_guidance_art6_4_en.pdf.

⁷⁹Article 192.

throughout the entire Convention. However, States must avoid all unjustifiable interference with the activities carried out by other States in the exercise of their rights.⁸⁰ Moreover, States must take “all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their environment”; hence, even though the Convention does not impose obligations on the States beyond their national jurisdiction, they are obligated to take measures with respect to renewable energy installations that are under their control, even on the high seas.⁸¹

One way of complying with this obligation is by designating “marine protected areas,” which, as defined by the Convention on Biological Diversity, are understood to be “any defined area within or adjacent to the marine environment, together with its overlying waters and associated flora, fauna and historical and cultural features, which has been reserved by legislation or other effective means, including custom, with the effect that its marine and/or coastal biodiversity enjoys a higher level of protection than its surroundings. Areas within the marine environment include permanent shallow marine waters; sea bays; straits; lagoons; estuaries; subtidal aquatic beds (kelp beds, seagrass beds; tropical marine meadows); coral reefs; intertidal muds; sand or salt flats and marshes; deep-water coral reefs; deep-water vents; and open ocean habitats.”⁸² While we cannot find an express legal basis in any international legal instrument allowing the creation of marine protected areas, there are around 5000 protected sites, of which 10% are established in waters beyond national jurisdiction.⁸³ However, marine protected areas could be justified under article 194(5), which requires, among the measures for conserving the marine environment, “those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life.”⁸⁴

The regulation of protected areas is addressed in different legal instruments both within areas under national jurisdiction and in the high seas.⁸⁵ Some regional organizations also foresee to take measures to protect and preserve the marine environment. Their great challenge is to reconcile the interests of States that wish to establish conservation measures with the interests of States that prefer other kinds of uses, which could include harnessing renewable energies. The point is not to

⁸⁰Article 194(4).

⁸¹See Abad Castelos (2014), p. 227.

⁸²Decision VII/5 (2004), Seventh meeting of the Conference of the Parties (COP-7), 9–20 February 2004—Kuala Lumpur, Malaysia, doc. UNEP/CBD/COP/DEC/VII/5, 13 April 2004.

⁸³See Sands et al. (2012), p. 442.

⁸⁴See Scovazzi (2004), p. 5.

⁸⁵In this regards, as we know a new implementing agreement of UNCLOS is being negotiated on the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction which addresses marine protected areas as one of its elements (UN General Assembly adopted, on 19 June 2015, Resolution 69/292).

prohibit a set of activities unnecessarily but to set up a wide range of protective measures to ensure that conservation targets are met. The Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (Barcelona, 10 June 1995) is a good example. It allows each of its Parties to regulate (taking account of the characteristics of each protected area) a set of activities (including ocean energy projects⁸⁶), which can endanger the state of conservation of the ecosystems or species.⁸⁷

Finally, it should be recalled that the Convention on the Law of the Sea also stipulates a set of general obligations with respect to power grids,⁸⁸ *inter alia*, the obligation to take measures to control marine pollution from the use of technologies under jurisdiction or control of States⁸⁹ and the obligation to minimize pollution from the construction and operation of installations and devices operating in the marine environment.⁹⁰

7 Final Remarks

The European Commission has recognized that the environmental effects of ocean energy installations have not yet been identified, nor how environmental legislation in the different phases of projects should be applied. Nonetheless, experience gained from other activities, such as marine wind energy, can act as a guide for the implementation of new initiatives. The assessment carried out by the Spanish authorities for the development of marine wind energy demonstrated the need to accommodate some very different legal obligations arising not only from domestic law and EU law but also from international law. Even so, the existing regulatory framework has many gaps. States are ultimately forced to seek new forms of cooperation according to their needs. We will also have to stay attentive to the work of the International Renewable Energy Agency (IRENA). Although the agency's powers are limited, its objective is the widespread introduction of all forms of renewable energy, *inter alia*, marine energy, which includes tidal power, wave power, and ocean thermal energy.⁹¹

The European Union must also urge Member States to approve all legislative instruments that can hinder ocean energy development, such as maritime spatial

⁸⁶See Scovazzi (2014), p. 427.

⁸⁷Article 6.

⁸⁸See Roeben (2013), p. 850.

⁸⁹Article 196 (1).

⁹⁰Article 194(3)(d).

⁹¹International Renewable Energy Agency (IRENA), Statute, 26 January 2009, available at <http://www.irena.org>. Accessed 23 Jun 2016.

planning instruments and designations of Natura 2000 marine protected areas. In addition, although the EU has already adopted the basic principles for cross-border grid cooperation, the establishment of regional structures needs to be fostered as well, to harmonize the requirements set for each individual project. This is a task that falls essentially within the competence of the Member States.

References

- Abad Castelos M (2014) Marine renewable energies: opportunities, law, and management. *Ocean Dev Int Law* 45:221–237
- Andreone G (2015) The exclusive economic zone. In: Rothwell D, Oude Elferink A, Scott K, Stephens T (eds) *The Oxford handbook of the law of the sea*. Oxford University Press, Oxford, pp 159–180
- Andreone G, Cataldi, G (2014) Sui Generis Zones. In Attard D, Fitzmaurice M, Martínez Gutiérrez N (eds) *The IMLI manual on international maritime law: Volume I: the law of the sea*. Oxford University Press, Oxford, pp 217–238
- Birnie P (1997) The status of environmental ‘Soft Law’: trends and examples with special focus on IMO norms. In: Ringbom H (ed) *Competing norms in the law of marine environmental protection: focus on ship safety and pollution prevention*. Kluwer, London, pp 31–57
- Cottier T (2015) *Equitable principles of maritime boundary delimitation*. Cambridge University Press, Cambridge
- Ford-Ramsden K, Davenport T (2014) The manufacture and laying of submarine cable. In: Burnett DR, Beckman RC, Davenport TM (eds) *Submarine cables. The handbook of law and policy*. Martinus Nijhoff, Leiden/Boston, pp 123–154
- Long R. (2013) Offshore wind energy and ecosystem-based management: are the EU regulatory answers really blowing in the wind?. In: Nordquist MH, Moore JN, Chircop AE, Long R (eds) *The regulation of continental shelf development: rethinking international standards*. Martinus Nijhoff, Leiden/Boston, pp 15–52
- Papanicolopulu I (2007) A note on maritime delimitation in a multizonal context: the case of the Mediterranean. *Ocean Dev Int Law* 38:381–398
- Roeben V (2013) Governing shared offshore electricity infrastructure in the Northern Seas. *Int Comput Law Q* 62(04):839–864
- Sands P, Peel J, Fabra A, MacKenzie R (2012) *Principles of international environmental law*, 3rd edn. Cambridge University Press, Cambridge/New York
- Scott KN (2006) Tilting at offshore windmills: regulating wind farm development within the renewable energy zone. *J Environ Law* 18:89–118
- Scovazzi T (2004) Marine protected areas on the high seas: some legal and policy considerations. *Int J Mar Coast Law* 19(1):1–17
- Scovazzi T (2014) Marine protected areas in the Mediterranean. In: Juste J, Bou V (eds) *Derecho del mar y sostenibilidad ambiental en el Mediterráneo*. Tirant lo Blanch, Valencia, pp 425–441
- Soininen N (2015) Marine spatial planning in the European Union. In: Hassan D, Kuokkanen T, Soininen N (eds) *Transboundary marine spatial planning and international law*. Routledge, New York, pp 189–120

- Vazquez Gomez E (2012) The ecosystem approach to fisheries in environmental emergencies. In: Andreone G, Caligiuri A, Cataldi G (eds) *Law of the sea and environmental emergencies*. Editoriale Scientifica, Naples, pp 146–159
- Zervaki A (2015) Introducing maritime spatial planning legislations in the EU: fishing in troubled waters? *MarSafeLaw J* 1:95–114

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

