D6.2: Review of current EU and international legal frameworks

Marine Ecosystem Restoration in Changing European Seas MERCES

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Executive Summary

The report reviews the disparate laws and policies applicable to marine ecological restoration in changing European seas. The discussion starts with a brief overview of the MERCES project from a regulatory perspective. The report explores the meaning of the term ecological restoration from legislative and case law perspectives. This is followed by a snapshot of soft law instruments that are aimed at advancing the restoration agenda, as well as the burgeoning volume of black letter instruments that codify the requirement to restore natural habitats and species, as well as focus on improving the conservation status of the marine environment. The discussion concludes by highlighting the need to include restoration as a fundamental objective of the new instrument under negotiation at the United Nations that is aimed at the conservation and sustainable use of biodiversity in areas beyond national jurisdiction. In reviewing the progressive development of international and EU law on a discrete topic that is also closely linked with an ambitious programme on climate action, the analysis aims to demonstrate how ecological restoration has the potential to become the normative and regulatory heart of European efforts to improve the health of the ocean.

Contents

LAW AND POLICY REVIEW

*Ronan Long**

1. Introduction

1-01 Although the deep-ocean remains largely unexplored,[1] it is nonetheless home to the largest ecosystems on the earth with abundant biodiversity and is therefore inextricably linked to the future wellbeing of all life on our planet. The ocean and the atmosphere are two interconnected systems with symbiotic relationships that function in highly dynamic and complex processes coupled with the climate. In particular, the ocean plays a vital role in moderating the climate. Conversely, at the same time, the effects of climate change impact upon the physical and oceanographic features of the ocean including sea temperature, salinity, acidification, stratification, circulation, productivity and sea levels in the coastal environment.[2]

1-02 In order to respond to these impacts, there is increased political awareness at the United Nations and in the European Institutions that stewardship of the marine environment needs to be at the very heart of decision-making and regulatory choices if the world is to achieve a

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[1] T. Webb *et al*., "Biodiversity's big wet secret: The global distribution of marine biological records reveals chronic under-exploration of the deep pelagic ocean" (2010) 5 *PLoS One*, e10223.

[2] United Nations, Technical Abstract of the First Global Integrated Marine Assessment on the Impacts of Climate Change and Related Changes in the Atmosphere on the Oceans (New York: United Nations, 2015).

sustainable future for present and future generations.[3] Ominously, however, the marine environment is facing many challenges and anthropogenic impacts in particular are radically reshaping the health and resilience of the oceans due to many pressures including land-based and vessel source pollution including micro-plastics, overfishing, habitat loss and the spread of invasive alien species.[4]

1-03 The scale of the challenges should not be underestimated in light of the findings of the United Nations First Global Integrated Marine Assessment, which concluded that the ocean's carrying capacity is "near or at its limit" and called for urgent international action to arrest the decline in the health of the ocean in general and marine biodiversity most particularly.[5] Moreover, the effects of climate change and the loss of marine biodiversity including fisheries go hand-in-hand and are endangering economic prosperity worldwide, with least developed countries most at risk.[6] The precise nature of the consequences appear to be difficult to measure but it is nonetheless significant that the World Economic Forum have identified major biodiversity loss and ecosystem collapse as a major global environmental risk that will result in the depletion of resources, armed conflict, involuntary human displacement, along with the failure of the natural environment to contribute

[3] See, opening speech of European Commissioner Vella, Ocean Conference Malta, 4th October 2017. Also, K Mengerink, K. J., Van Dover, C. L., Ardron, J., Baker, M., Escobar-Briones, E., Gjerde, K., Levin, L. A. (2014). A call for deep-ocean stewardship. *Science*, 344, 696.

[4] See *inter alia*: Danovaro, R., Gambi, C., Dell'Anno, A., Magagnini, M., Noble, R., Tamburini, C., & Weinbauer, M. (2008). Exponential decline of deep-sea ecosystem functioning linked to benthic biodiversity loss. Current Biology, 18, 1–8; Benjamin S. Halpern, Shaun Walbridge, Kimberly A. Selkoe, Carrie V. Kappel, Fiorenza Micheli, Caterina D'Agrosa, John F. Bruno, Kenneth S. Casey, Colin Ebert, Helen E. Fox, Rod Fujita, Dennis Heinemann, Hunter S. Lenihan, Elizabeth M. P. Madin, Matthew T. Perry, Elizabeth R. Selig, Mark Spalding, Robert Steneck, Reg Watson, A Global Map of Human Impact on Marine Ecosystems, *Science,* 15 Feb 2008 : 948-952; Jackson, J. B. C. Ecological extinction and evolution in the brave new ocean. Proceedings of the National Academy of Science 105,
11458–11465 (2008); Jackson, J. B. C. et al. Historical overfishing and the recent collapse of coastal ecosystems. Science 293, 629-638 (2001).

[5] Foreword by the Secretary-General of the United Nations, First World Ocean Assessment, including the summary is available at www.un.org/depts/los/rp. The assessment was approved by the General Assembly in December 2015, see General Assembly resolution 70/235, para. 266.

[6] See, *inter alia*: Blasiak R, Spijkers J, Tokunaga K, Pittman J, Yagi N, Österblom H (2017) Climate change and marine fisheries: Least developed countries top global index of vulnerability. *PLoS ONE* 12(6); Ove Hoegh-Guldberg, John F. Bruno, The Impact of Climate Change on the World's Marine Ecosystems, Science, 18 Jun 2010.

effectively to strategies and policies that are aimed at climate change mitigation and adaptation.[7] At a global level, the marked underperformance of countries in achieving the relatively modest biodiversity conservation targets agreed under the Convention of Biological Diversity and related instruments bodes poorly for the wellbeing of the international community.[8]

1-04 A similar bleak picture is emerging in Europe's regional seas, where the degradation of the marine environment and the loss of biodiversity appears to be continuing unabated and at an unprecedented scale. [9] Overfishing, aquaculture, pollution, eutrophication, coastal and offshore developments are all contributing to the loss of natural capital and the services that it supplies.[10] Reversing this trend is still possible if the EU embraces a paradigm shift by continuing to adopt proactive recovery measures that aim to improve the health of the ocean.[11] In Europe, there are positive tidings in this regard with a number of significant initiatives underway as part of the EU's maritime, climate change and environmental policies, which have the overall priority objective of restoring ecosystem resilience in the terrestrial and marine environments by 2050.[12] The policy response has four distinct but inter-related strands in the form of measures that are geared towards mitigation, adaptation, avoidance and restoration, all with a view to delivering sustainable economic development in the Member States.[13]

1-05 In parallel with policy consolidation, the EU has taken a leadership role at the multilateral diplomatic negotiations to conclude a new treaty concerning the conservation and sustainable use of biodiversity in areas beyond national jurisdiction. Furthermore, action sometimes speaks louder than words and the European institutions are flexing their financial muscle to foster cleaner

[7] World Economic Forum, The Global Risks Report 2017, at 22.
[8] European Environment Agency, EEA Report No 3/2015 notes that are over 48,000 species in the European marine environment.
[9] EEA Report No 2/2015, The State of Europe's Seas (Luxembourg: EEA, 2017), *passim*.
[10] *Ibid*.
[11] Mergenink *et al*., 2014 *Science* 344:296.
[12] European Commission, Our life insurance, our natural capital: an EU biodiversity strategy to 2020, COM(2011) 244, 3.5.2011, para. 2.1.
[13] European Environment Agency, The European environment: State and outlook 2015: synthesis report (Luxembourg: European Union, 2015) at 156 and 158.

seas worldwide by making fiscal provision for the implementation of marine ecosystem restoration programmes in the Caribbean Sea Basin and in the Mediterranean Sea,[14] along with supporting actions in African, Caribbean and Pacific countries. At the Ocean Conference in Malta, the European Commission announced an array of climate change regulatory and fiscal measures within the broader framework of ocean governance solutions.[15]

1-06 All of the aforementioned initiatives are complementary and designed to protect and conserve the natural environment on the basis of the best available scientific information about the status of the marine environment and the resources it supports. Furthermore, there is general acceptance in the EU law-making institutions that regulatory responses need to be based upon the application of innovative normative tools to guide ocean governance and climate change action.[16] In this context, there is also a growing realisation that the setting of conservation targets for individual species and the designation of large swathes of the ocean as protected areas will not be sufficient to save the health of marine ecosystems that are damaged or destroyed by human pressures. In response, as the climate clock ticks, the EU is firmly committed to shifting the regulatory pendulum towards exploring how the concept of ocean recovery can be based upon the legal duty, science and practice of ecological restoration.[17] In the longer-term, the successful implementation of the concept of recovery has the potential to advance the so-called green and blue economies, facilitate the delivery of ecological services and improve the

[14] European Commission, New funding opportunity: €14.5 million in Sustainable Blue Economy call, 24.11.2007, which calls for the establishment of a specific programme to restore damaged or degraded coastal and marine natural capital, and/or create new areas of blue-green infrastructure, along with making use of state-of-the-art or innovative methods of marine ecosystem restoration and protection.
[15]The European Commission announcing at the Ocean Conference in Malta in October 2017 that it was committing significant financial resources amounting to 500 million See, European Commission Factsheet, EU leads the way with ambitious action for cleaner and safer seas 5th October 2017. Available at: http://europa.eu/rapid/press-release_MEMO-17-3588_en.htm.
[16] Joint Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: International ocean governance: an agenda for the future of our oceans, Brussels, 10.11.2016 JOIN(2016) 49 final at 14, 16-17.
[17]see speech by Commissioner Vella at COP 13, See, *inter alia*: R. J. Hobbs, V. A. Cramer, "Restoration ecology: interventionist approaches for restoring and maintaining ecosystem function in the face of rapid environmental change" (2008) *Annual Review of Environment and Resources*
Vol. 33:39-6.

implementation of the principle of sustainable development in line with the 2030 Agenda,[18] as well as its twin sister, the Paris Agreement on Climate Change.[19] Most importantly, it will also help bridge the regulatory gap and ensure greater convergence between the ocean and climate change regimes under international and EU law.[20] The European ocean restoration agenda is thus a global agenda.

1-07 In light of these developments, this report reviews the disparate laws and policies applicable to marine ecological restoration in the EU. The discussion starts with a brief overview of the MERCES project, which is an ambitious trans-European inter-disciplinary research effort on marine restoration focused on closing the knowledge gap concerning the ecological functioning of marine ecosystems and their capacity for recovery under various restoration strategies.[21] The report explores the meaning of the term ecological restoration from regulatory and case law perspectives. This is followed by a snapshot of soft law instruments that are aimed at advancing the restoration agenda, as well as the burgeoning volume of black letter instruments that codify the requirement to restore natural habitats and species, as well as focus on improving the conservation status of the marine environment. The discussion concludes by highlighting the need to include restoration as a fundamental objective of the new instrument under

[18] Ecological services are defined by the MEA in 2005, as "the benefits people obtain from ecosystems". Thurber *et al*., 2014 *Biogeosciences* 11:3941; on services, Barbier, E.B., Hacker, S.D., Kennedy, C., Koch, E.W., Stier, A.C. and Silliman, B.R. (2011): The value of estuarine and coastal ecosystem services. Ecological Monographs 81: 169–193; Thurber, A. R., Sweetman, A. K., Narayanaswamy, B. E., Jones, D. O. B., Ingels, J., & Hansman, R. L. (2014). Ecosystem function and services provided by the deep sea. Biogeosciences, 11, 3941–3963; Robert Costanza, Rudolf de Groot, Leon Braat, Ida Kubiszewski, Lorenzo Fioramonti, Paul Sutton, Steve Farber, Monica Grasso, Twenty years of ecosystem services: How far have we come and how far do we still need to go?, *Ecosystem Services* Volume 28, Part A, December 2017, 1-16.

[19] Art 4(4) of the UNFCCC requires developed country parties listed in Annex II and the EU to assist countries that are particularly vulnerable to the adverse effects of climate change in meeting costs of adaptation to those adverse effects. This acknowledges responsibility and imposes financial consequences that is pertinent to the discussion of ocean recovery in the context of climate change.

[20] At COP 21 and 23, there was discussion on the role of oceans in temperature regulation, carbon sequestration, and the importance of restoring ecosystem services and the productive capacity of the oceans. Available at: http://www.un.org/sustainabledevelopment/blog/2017/11/cop-23-ocean-action-day/.

[21] Examples of projects include: Climate Change and European Marine Ecosystem Research (CLAMER) (http://cordis.europa.eu/result/rcn/56103_en.html).

negotiation at the United Nations that is aimed at the conservation and sustainable use of biodiversity in areas beyond national jurisdiction. In reviewing the progressive development of international and EU law on a discrete topic that is also closely linked with an ambitious programme on climate action, the analysis aims to demonstrate how ecological restoration has the potential to become the normative and regulatory heart of European efforts to improve the health of the ocean.

2. Framing the narrative: regulatory trends and the MERCES project

2-01 Much of the discussion below is given over to reviewing the myriad laws and policies that apply to the topic of marine ecological restoration in the EU. Restoration activities can be large scale or project based like the EU's MERCES project, which is tasked with reviewing the scientific, law and policy options for undertaking more effective marine ecosystem restoration actions in changing European Seas.[22] A key component of the project is to explore how the law can be used as a creative tool in integrating restoration requirements into decision-making in relation to spatial planning of human activities in the marine environment and in relation to the control of offshore activities such as fishing, coastal tourism, offshore hydrocarbon and renewable energy development, aquaculture and seabed mining. In the latter context, one of the aims of the MERCES project is to provide insights that will ultimately assist the European institutions and the Member States in the difficult task of designing effective and legitimate governance arrangements for sustainable uses of marine ecosystems in Europe's regional seas and that facilitate the implementation of new restoration actions to increase resilience to the effects of climate change.

2-02 At the outset, from a legal analysis point of view, there are a number of regulatory trends already evident from the MERCES project that require enumeration because of their potential to frame the narrative. First, ecological restoration is inter-disciplinary and science led, embracing a wide range of stakeholders including public and private actors on the legal landscape. Second, the progressive development of the law and policy in relation to restoration of the marine environment is very much shaped by the experience gained in the practice and application of restoration techniques in the terrestrial and coastal environment, along with regulatory developments in

[22] See MERCES: http://www.merces-project.eu/.

other areas of international treaty and customary law.[23] Third, many of the key regulatory tools concerning area-based management along with species and habitat protection are focused principally on biodiversity conservation and maintenance objectives. The trigger for restorative action appears to be engaged at a certain point of environmental harm. Fourth, the potential of marine ecological restoration appears poorly understood by regulators and policy-makers in the broader context of formulating and adopting climate change mitigation and adaptation measures. Fifth, the law and policy framework is in a progressive state of development and future directions for the law on ecological restoration will undoubtedly be shaped by the scientific findings of the MERCES project. Clearly, the issue of scale is important and considerable care needs to be taken with deriving lessons from project based research and applying results at the level of Europe's regional seas in the context of proposals that advance innovative approaches to ocean management and climate action. Finally, it should be noted that many of the concepts and standards that apply to ecological restoration are the subject to a unique lexicon that is unfamiliar to the non-specialist. Many of the terms do not always sit comfortably with existing terminology in the law of the sea as it pertains to Europe's regional seas. In the interest of clarity, perhaps it is best to commence the review by taking a brief look at the meaning of the term restoration and the duty to restore marine ecosystems.

[23] For instance, liability for restoration has arisen in the work of the UN Compensation Commission including the development of novel approaches including abstract habitat equivalency analysis for the loss of ecological services. The Draft Articles on State Responsibility for Internationally Wrongful Acts are relevant to the discussion including Articles 34 and 35 on reparations and restitution. There is considerable state practice on restoration in the United States gained under the application of the Estuaries Restoration Act 2000, as well as in relation to endangered species. See: F. Cheever, "The Road to Recovery: A New Way of Thinking about the Endangered Species Act", 23(1996) *Ecology L. Q.* 1. Available at: http://scholarship.law.berkeley.edu/elq/vol23/iss1/1. There are also the emerging principles of non-regression and ecological integrity, which features in the laws and policies of several Latin American countries.

3. Definitional uncertainty: restoration and the duty to restore

3-01 Language is important when discussing treaty and EU law obligations in relation to the marine environment. For the purpose of the discussion below, the meaning of the terms "biological diversity" "ecosystem" and "habitat" is the same as those contained in the Convention on Biological Diversity. The meaning of other terms is less clear and this is not unique to the law in the EU. Indeed, it is somewhat regrettable that a long-standing feature of law of the sea negotiations is that international diplomatic conferences do not always ensure precision and clarity regarding the meaning of technical terms in legally binding instruments. The absence of agreed definitions means that many terms and phrases in the United Nations Convention on the Law of the Sea (hereinafter, LOS Convention) and related treaties continue to pose challenges on how best to interpret and apply legal obligations in specific factual circumstances.[24]

3-02 This is very much the case with the term "restoration", which is capable of different meanings in different scientific, legal and political contexts. Thus it is unsurprising to note that an air of uncertainty pervades discussions in diplomatic, epistemic and legal communities regarding what the obligation to restore entails in practice. In the absence of uniform definitions, caution must thus be exercised with terminology, as the meaning of marine ecological restoration and the duty to restore can vary significantly under different international and EU legal instruments.[25]

[24] On efforts to standardise the use of language, see, Satya N. Nandan & Shabtai Rosenne eds., Myron H. Nordquist ed.-in-chief, *United Nations Convention On The Law Of The Sea 1982: A Commentary* (Dordrecht/Boston/London: Martinus Nijhoff, 1993) Vols. 1 and II, at Xli, and 27-47.The American Branch Law of the Sea Committee of the International Law Association's as begun analyzing the 1982 U.N. Convention on the Law of the Sea2 to try to clarify words or phrases that the Convention does not define. See, John E. Noyes, Definitions for the Law of the Sea: Terms Not Defined by the 1982 Convention (Boston/Leiden: Brill/Nijhoff, 2012); George K. Walker, John E. Noyes, Definitions for the 1982 Law of the Sea Convention *California Western International Law Journal*, Vol. 32 [2001], No. 2, Art. 6, 343-386.

[25] Definition are examined by A. Teleesetsky, A. Cliquet, A Akhtar-Khavari, *Ecological Restoration in International Environmental Law* (Abingdon: Routledge, 2017) at 17-37.

a. Duty to restore fisheries under the LOS Convention & related instruments

3-3 Although the MERCES project is not concerned directly or exclusively with fisheries or seabed mining, these are nonetheless important regulated activities that shed light on what restoration means as a term of art in a law of the sea context. For instance, the duty to restore is sometimes framed or benchmarked to a particular scientific reference standard in law of the sea instruments, particularly in treaties that are aimed at the conservation and management of living resources. A notable example of this functional approach to the term is evident in the provisions on the conservation of the living resources of the exclusive economic zone and the high seas in the LOS Convention, which require States "to maintain or restore populations of harvested species at levels that can produce maximum sustainable yield (MSY), as qualified by environmental and economic factors" such as the interdependence of fish stocks.[26]

3-04 A similar approach is evident in the 1995 United Nations Fish Stocks Agreement, which elevates the duty to restore to a general principle and links its application to the precautionary principle and the attainment of MSY.[27] The latter reference standard is defined by the United Nations Food and Agricultural Organization to mean: "the highest theoretical equilibrium yield that can be continuously taken (on average) from a stock under existing (average) environmental conditions without affecting significantly the reproduction process."[28]

3-05 The usefulness of MSY as a scientific benchmark is highly contentious because of its limitations in managing multispecies fisheries and the broader ecosystem interactions in the marine environment, as well as its failure to take

[26] Article 61(3) and 119(1)(a), UNCLOS.
[27] Articles 5(b), 5(e), 6(4), annex II (paragraph 4), UNCLOS.
[28] FAO Glossary at: http://www.fao.org/faoterm/collection/fisheries/en/. On the meaning of MSY in a legal context, see Patricia Birnie, Alan Boyle, Catherine Redgwell *International Law and the Environment*, 3Ed., (Oxford: Oxford University Press, 2009) 590-591

into account social and stakeholder considerations in fishery management decisions.[29] The disastrous state of world fisheries speaks volumes and highlights the crudeness of MSY as a normative benchmark for restorative action with 68.5 percent of fish stocks deemed by the FAO to be fished beyond biologically sustainable levels and a further 31.5 percent classified as overfished in 2015. The restoration of fisheries for an economic purpose needs to be distinguished carefully from the science and practice of marine ecological restoration, which tends to be far wider in material scope and geographical ambit extending to biodiversity more generally with a view to strengthening ocean health and resilience to climate change.

b. Seabed mining: no express duty to restore

3-06 Elsewhere in the LOS Convention, the duty to restore is not mentioned expressly in the provisions in Part XI on seabed mining beyond the limits of national jurisdiction (the Area),[30] or in the ancillary Agreement relating to the Implementation of Part XI of the LOS Convention.[31] Furthermore, the Exploration Regulations adopted by the International Seabed Authority do not set down any requirements regarding the marine ecological restoration of exploration sites.[32] That said, Part XI and the 1994 Implementation Agreement have both to be read in light of general and specific obligations under the LOS Convention to protect the marine environment, including the obligation to adopt measures "to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered

[29] On the contribution of the concept MSY to unstainable fishing practices worldwide, see, Ellen Hey, "The Persistence of a Concept: Maximum Sustainable Yield" *The International Journal of Marine and Coastal Law* 27 (2012) 763-771.
[30] Articles 133-191, LOS Convention.
[31] 1994 Agreement relating to the implementation of Part XI of the UNCLOS of 10 December 1982, 1836 UNTS 42 (entered into force 28 July 1996). M Lodge 'The deep seabed' in Rothwell and others (eds) The Oxford Handbook of the Law of the Sea (n 3) 226–53 at 240–43. 132 ITLOS Case No 17 Advisory Opinion on responsibility and liability for international seabed mining (2011) 50 ILM 458, para 145.
[32] Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area, adopted 13 July 2000, ISBA/6/A/18, which was later updated and adopted 25 July 2013, ISBA/19/C/17; the Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area, adopted 7 May 2010, ISBA/16/A/12/Rev.1 and the Regulations on Prospecting and Exploration for Cobalt-Rich Crusts, adopted 27 July 2012, ISBA/18/A/11.

species and other forms of marine life".[33] Contemporary environmental thinking and practice in relation to seabed mining is also very revealing in so far as the environmental management plan adopted for the Clarion-Clipperton Zone states that the operational objectives for the contract areas are to "develop plans to ensure responsible environmental management to enhance the recovery of habitats and faunal communities" of the deep seabed.[34]

3-07 Further guidance can be gleaned from a discussion paper published by the International Seabed Authority on the development of a regulatory framework for seabed mining in so far as it defines the term "restoration" to include the process of assisting the recovery and management of the ecological integrity of marine ecosystems affected by exploitation activities in the Area.[35] In view of the technical difficulties and high costs associated with the restoration of deep-sea ecosystems, the proposed plans for seabed mining are contentious and there have been a number of calls for a moratorium on mining activities.[36]

3-08 Although couched in the language of feasibility and practicality, restoration considerations figure in the obligations that arise under the Draft Regulations on Exploitation of Mineral Resources in the Area, which requires the preparation of an environmental management and monitoring plan to include information on any practicable restoration or rehabilitation of the

[33] Article 194(5), LOS Convention.
[34] ISA, ISBA/17/LTC/7, 13 July 2011, Environmental Management Plan for the Clarion Clipperton Zone, paragraphs 38(d). A similar obligation arises under paragraph 41(f), which requires contractors to include in their environmental management plans "specific measures that will maximize the potential for the recovery of biota impacted by their activities in the Clarion-Clipperton Zone."
[35] International Seabed Authority, A Discussion Paper on the development and drafting of Regulations on Exploitation for Mineral Resources in the Area (Environmental Matters), January 2017. Available at: https://www.isa.org.jm/files/documents/EN/Regs/DraftExpl/DP-EnvRegsDraft25117.pdf.
[36] Van Dover, C.L.; Aronson, J.; Pendleton, L.; Smith, S.; Arnaud-Haond, S.; Moreno-Mateos, D.; Barbier, E.; Billett, D.; Bowers, K.; Danovaro, R.; Edwards, A.; Kellert, S.; Morato, T.; Pollard, E.; Rogers, A.; Warner, R.., "Ecological Restoration in the Deep Sea: Desiderata" (2014) 44 *Marine Policy* 96-106; Kathryn J. Mengerink, Cindy L. Van Dover, Jeff Ardron, Maria Baker, Elva Escobar-Briones, Kristina Gjerde, J. Anthony Koslow, Eva Ramirez-Llodra, Ana Lara-Lopez, Dale Squires, Tracey Sutton, Andrew K. Sweetman, Lisa A. Levin, A Call for Deep-Ocean Stewardship" (2014) 344 *Science* 696-698; A. Jaeckel, *The International Seabed Authority and the Precautionary Principle: Balancing Deep Seabed Mineral Mining and Marine Environmental Protection* (Boston/ Ledien: Nijhoff, 2017) 221-224.

marine environment.[37] Under the draft regulations, the definition of the terms "mitigate" and "mitigation" includes "rectifying the effect by repairing, rehabilitating or restoring the affected" marine environment.[38] Mitigation measures come within the scope of environmental assessment procedures under the draft regulations without any further articulation therein as to what restorative action should entail in both form and substantive outcomes.

3-09 What is significant from the point of view of the MERCES project is that the working draft of the specialist study commissioned by the International Seabed Authority points out that it will not be feasible to restore sea-bed ecosystems from the effects of seabed mining. Notably, however, restoration appears to be equated with repair and rehabilitation in the draft mining Regulations, which is clearly at odds with meaning of the term in the specialist scientific literature published by the Society of Ecological Restoration, as will be seen further below.

c. Benchmarking restoration to a scientific reference standard

3-10 The absence of a uniform approach to terminology is also evident in international biodiversity treaties, with some instruments such as the Convention on the Conservation of Migratory Species of Wild Animals linking restoration with the attainment or maintenance of the normative standard of favourable conservation status, or with removing species from the danger of extinction.[39]

3-11 A similar approach is also evident in EU secondary legislation applicable to the marine environment which set down far clearer and more holistic requirements than international law regarding the legal obligations that

[37] Draft Regulations on Exploitation of Mineral Resources in the Area, Annex VII, paragraph (d). ISBA/23/LTC/CRP.3, 8 August 2017.
[38] Ibid, Schedule 1.
[39] See, for example, Article III 4(a), Article V (1) and VI 5(e), Convention on the Conservation of Migratory Species of Wild Animals.

arise and the scientific aspects of restoring the marine environment, ecological systems, as well as threatened habitats and species.

3-12 A good example is the Habitats Directive, examined in greater detail below, which defines conservation as "a series of measures required to maintain or restore the natural habitats and the wild species of fauna and flora at favourable conservation status".[40] The aforementioned approach must be welcomed from empirical and legal perspectives in the context of the MERCES project, as the Directive defines favourable conservation status by referring to three conjunctive requirements that can be measured scientifically, namely: (1) the population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats; (2) the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and; (3) there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.[41]

3-13 Similar normative benchmarking of restoration is evident in other areas of EU law applicable to the marine environment including most importantly under the Marine Strategy Framework Directive, which links the maintenance of biodiversity with the duty to restore the marine environment and ecosystems where appropriate.[42] Significantly, mitigation and management tools in the operational programmes for the attainment of favourable conservation are described in the latter instrument as tools that "guide human activities to restore damaged components of marine ecosystems".[43]

[40] Article 1(a), 2(2), 3(1), Directive 92/43/EEC.
[41] Article 1(i), Directive 92/43/EEC.
[42] Paras 3, 39 and 43 Preamble, Article 1(2)(a), 13(5), Directive 2008/56/EC.
[43] Para 4, Annex V, and Para 6, Annex VI, Directive 2008/56/EC.

d. Working definitions from a public policy and interdisciplinary perspective

3-14 EU soft law instruments and publications shed additional light on the term restoration and the duty to restore from a public policy perspective.[44] In general, the material, geographical and material scope of restorative action appears far wider in the public policy sphere and thus more amenable to the concept of ocean recovery. Taking a historical perspective, for example, the regulatory impact assessment accompanying the EU's Biodiversity Strategy describes ecosystem restoration as "the return of an ecosystem to its original community structure, natural complement of species, and natural functions".[45] The European Environmental Agency (EEA) have stated that restoration policies are "used across most environmental domains and in economic and social policy areas", with a view to improving ecosystem resilience, bringing multiple benefits to human health and well-being.[46] According to the EEA, the implementation of such policies facilitate the "pursuit of social and environmental goals simultaneously". The latter consideration is important from the point of view of the MERCES project as it acknowledges explicitly that ecosystem restoration as a specialist discipline is multidisciplinary in ambit and necessitates collaborative working partnerships between scientists, public policy experts and regulators.[47]

e. Distinguishing restoration from remediation, rehabilitation and reclamation

3-15 In contrast from the ambiguity that arises from the terminology that is used in international and EU legal instruments, far more clarity as to the meaning of ecological restoration can be garnered from the work of specialist scientific groups such as the Society of Ecological Restoration (SER), which

[44] See para 5 *infra*.
[45] European Commission, Our life insurance, our natural capital: an EU biodiversity strategy to 2020, COM(2011) 244, 3.5.2011, at
[46] European Commission, Our life insurance, our natural capital: an EU biodiversity strategy to 2020, SEC(2011) 540, at 21.
[47] See para 10 *infra*.

defines the term "restoration" as "the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed".[48] Notably, this technical definition appears to focus on both the anthropogenic nature of the process, which is one of assistance along with the outcome of restoration, which is the recovery of an ecosystem without specifying any deadline for the attainment of the latter objective.[49] This may entail returning a degraded ecosystem to its historical trajectory as inferred from the life history and functional attributes of dominant taxa.[50]

3-16 According to SER, a "reference model can be derived from multiple sources of information about past and present biota and conditions occurring on or near the site; supplemented by information on anticipated changes in environmental conditions that may lead to altered biological assemblages".[51] Following on from this, full recovery is defined as the "state or condition whereby all the key ecosystem attribute categories resemble those of the reference model".[52] The reference system thus provides the paradigm for planning, monitoring and evaluating the success of a restoration project.[53]

3-17 Additional precision is evident in the classification made by two of the world's leading restoration ecologists, Andel and Aronson, who draw a clear distinction between natural recovery, recovery benchmarked to a historic reference system, rehabilitation without necessarily returning to pre-disturbance condition, as well as an activity that constitutes reclamation.[54] According to the SER, ecological restoration can be distinguished from remediation, rehabilitation or mitigation and ecological engineering in so far as all of the latter anthropogenic interventions are qualitatively different but can

[48] Society of Ecological Restoration (SER), *The SER International Primer in Ecological Restoration*, (SER International, 2004) at 3.
[49] *Ibid*.
[50] Van Dover et al., Ecological restoration in the deep sea: Desiderata (2014) 44 *Marine Policy* 98-106. Also see, A. Teleesetsky, A. Cliquet, A Akhtar-Khavari, *Ecological Restoration in International Environmental Law* (Abingdon: Routledge, 2017) at 17-18.
[51] T. McDonald, G. Gann, J. Jonson, K. Dixson, International Standards for the Practice of Ecological Restoration including principles and key concepts (Washington D.C.: SER, 2016) at 9.
[52] *Ibid.*
[53] *Ibid.*
[54] J. Van Andel, J. Aronson, Ed., *Restoration Ecology: The New Frontier*, 2Ed., (Oxford: Wiley-Blackwell, 2012) at 7.

nonetheless contribute to "an attempt to return an ecological system to some historic state".[55]

3-18 The classification drawn by Andel and Aronson raises some significant regulatory issues, because the law applicable to the marine environment needs to be based first and foremost on evidence, including scientific and empirical considerations. Determining the historic state of a marine ecosystem will often pose considerable evidential challenges because of the absence of relevant scientific baseline information and reference scale, as well as the ephemeral state of natural processes that make it difficult to agree the evaluation standards against which the success or failures of particular regulatory, policy or economic interventions can be measured.

3-19 The sub-categorisation of the different types of restoration activities made by SER shares a number of similarities with the distinction made under EU law between remediation and restoration, in so far as the former term refers to making good damage to the natural environment as a result of failure to discharge or uphold a legal duty.[56] One can cite the example of the successful restoration efforts of seabed reefs in the Kattegat between Sweden and Denmark cited by the European Environmental Agency.[57] *Stricto sensu*, this constitutes a remediation project as it entails the replacement of boulders on the seabed to reconstruct reefs that had been intensely exploited to construct harbours and coastal defences. As will be seen further below, EU law draws a distinction between restoration in the sense of taking positive measures to improve habitats in a poor condition as a result of past activities and remediation or reinstatement action to repair habitat and ecosystem damage for which there is legal liability.[58] Clearly, remediation can contribute but does not equate to restoration and the broader concept of ocean recovery.

[55] M. Palmer. D. Falkland, J. Zedler 'Ecological theory and restoration ecology" in D. Falk, M. Plamer and J. Zedler (eds.) *Foundations of Restoration Ecology* (Washington DC: Island Press, 2006) at 1.
[56] See discussion
[57] Palmer *et al*., note 56, at 12.
[58] See discussion on restoration and EU nature conservation law, para 8.5 *infra*.

f. Implications: different meanings in different contexts

3-20 Following on from the discussion above, a number of brief observations can be made about the meaning of the term restoration in the context of EU marine environmental law.

I. The term lacks a uniform definition in international and EU law, with different meanings attributed to restoration in a variety of scientific, public policy and legal contexts.

II. Restorative action may entail applying scientific, political, economic and regulatory approaches to addressing environmental degradation including measures that are aimed at mitigating the effects of climate change.

III. The term restoration is sometimes used interchangeably or concurrently with similar terms such as mitigation, rehabilitation, remediation and reinstatement in a number of hard and soft instruments and in the jurisprudence of international courts and tribunals.[59]

IV. For the purpose of the MERCES project, ecological restoration can be understood as a process of assisting the recovery of an ecosystem to continue to develop along healthy predicted trajectory had it not been degraded, damaged or destroyed.[60] This definition facilitates the setting of appropriate goals for recovery that can be measured against a scientific benchmark, which is the reference ecosystem. As noted by SER, the historical reference model can be derived from multiple sources of information about the condition of past and presented biota

[59] An illustrative example of this practice are the provisions on *in-situ* conservation set out in Article 8(f) of the Conservation on Biological Diversity, which require Contracting Parties to "rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, inter alia, through the development and implementation of plans or other management strategies"
[60] See note 48 supra. Also, Telesetsky *et al.*, at 17-37.

including anticipated changes of biological assemblages in light of changes in environmental conditions.[61] Clearly, ecological restoration of an ecosystem requires far more than the setting maintenance, conservation or sustainable use objectives in relation to the marine environment and the resources therein. In some instances, the most reliable way to assist the process is to facilitate natural recovery, which may take decades in the case of deep-water ecosystems such as those associated with cold-water coral. Accordingly, in the context of deep ocean biodiversity and the negotiations on a new biodiversity treaty for areas beyond national jurisdiction, discussed further below, perhaps the most reliable and practical way to implement the concept of ocean recovery is to facilitate the process of natural recovery by removing the stressors or mitigating anthropogenic impacts including the effects of human induced climate change.

V. Many EU legal instruments such as the Marine Strategy Framework Directive set down qualitative parameters in relation to the attainment of good environmental status and this approach can guide restorative action in so far as it provides a useful scientific paradigm that takes into account changing environmental conditions and anthropogenic impacts including the effects of climate change. This offers in many respects a far more practical approach to the restoration of the marine environment,[62] as it allows managers and regulators to focus on the outcome of the process, without striving to achieve goals pursuant to a more nebulous reference system that aims to turn back the clock to a historical trajectory. Furthermore, it will resolve many of the ambiguities that arise from the absence of a standard term-of-art definition of restoration in international and EU law.

[61] T. McDonald, G. Gann, J. Johnson, K. Dixon, International Standards for the Practice of Ecological Restoration- including Principles and Key Concepts (Washington DC: Society Ecological Restoration, 2016) at 9.
[62] Recital 43, Directive 2008/56/EC.

4. *Raison d'être* underpinning marine ecological *restoration*

4-01 The law cannot be separated out from its rationale and policy objectives. The reasons underpinning the marine restoration agenda in Europe is multi-faceted and largely driven by concerns about the deplorable state of the marine environment.[63] Indeed, if one looks behind the legal façade, there are several scientific, socio-economic and political reasons underpinning ocean recovery efforts at global and regional levels that are also applicable to the EU.[64]

4-02 The scientific case is compelling and explains why restoration ecology as a specialist scientific discipline is increasingly shaping marine environmental and climate change law with a view to facilitating the recovery of the health, integrity and ecological functions of degraded ecosystems.[65] More than any other factor, restorative action is premised upon the understanding that the health and functions of ecosystems are shaped by anthropogenic impacts on the natural environment, along with naturally occurring irreversible change. Instructively, a key specialist text argues that to restore "natural capital is the most direct and effective remedy for redressing the debilitating socioeconomic and political effects of its scarcity".[66] Over a decade ago, a similar compelling point was made in one authoritative study published in *Science*, which pointing out that "by restoring marine biodiversity through sustainable fisheries management, pollution control, maintenance of essential habitats and the creation of marine reserves, we can invest in the goods and services that the ocean provides to humanity".[67]

4-03 At a global level, the restoration of fisheries will ensure marine living resource sustainability, food security and contribute to the long-term resilience

[63] See Telesetsky *et al*., at 38-58.
[64] See, *inter alia*: J. Aronson et al., 'Restoring natural capital: definitions and rationale' in J. Aronson, S. Milton and J. Blignaut (eds), *Restoring Natural Capital: Science, Business, and Practice* (Island Press 2007) *passim*.
[65] S. Allison, *Ecological Restoration and Environmental Change: Renewing Damaged Ecosystems* (London, Routledge, 2015) 5.
[66] Aronson *et al*., at 3.
[67] B. Worm, E. Barbier, N. Beaumont, J. Emmett Duffy, C. Folke, B. Halpern, J. Jackson, Heike K. Lotze, F. Micheli, S. Palumbi, E. Sala, K. Selkoe, J. Stachowicz, R. Watson, "Impacts of Biodiversity Loss on Ocean Ecosystem Services" (2006) *Science*, 787-790.

of depleted ecosystems. Restorative measures can thus help alleviate poverty and hunger (Goals 1 and 2 of the SDGs), which is vital for small island developing States and African coastal States including those supported by the EU fiscal measures in 2017.[68] This is increasingly important in the era of the Anthropocene with the First Global Integrated Marine Assessment pointing out that under some climate change scenarios up to 60 per cent of the biomass in the ocean could be adversely impacted by climate change.[69] The World Bank estimates that the restoration of fish stocks and the reversal of the negative ecological consequences of overfishing and poor management could increase the economic return from marine fisheries by a factor of 30.[70]

4-04 The EU as a significant contributor to greenhouse gas emissions making-up 8% of global emissions and is searching continuously for innovative solutions in the battle against climate change.[71] EU targets are undoubtedly ambitious aiming to cut emissions 80-95% compared to 1990 levels by 2050. Further consideration thus needs to be given to the recommendation of the Global Biodiversity Outlook 4 Outlook that emphasises the importance of restoring the resilience of ecosystems as a means to adapt and mitigate the effects of climate change.[72]Specifically, marine ecological restoration through the enhancement of natural capital can bolster natural barriers for coastal protection and flood management. This is essential for European cities and coastal communities that are prone to flooding and are struggling to adapt to the effects of climate change in line with the objectives of the UNFCCC and related agreements. Indeed, the EU's adaptation strategy notes that restoring ecosystems in the marine

[68] See note 14 *supra.*
[69] United Nations, First Global Integrated Marine Assessment, Summary, at 12.
[70] The World Bank estimates on the basis of economic modelling that are significant economic benefits to be derived from allowing natural biological processes to aid the recovery of fish stocks including the following substantial increases: the biomass of fish by 270 per cent; annual catches by 13 per cent; as well as fish prices by 24 per cent for higher value species. Following on from these projections, the economic case is very compelling in so far as World Bank study estimates that 'annual net benefits accruing to the sector" from such a restorative approach to overexploited fish stocks is considerable in so far as it would amount to $83 billion, or in other words, by almost a factor of 30. World Bank, The Sunken Billions Revisited: Progress and Challenges in Global Marine Fisheries. (Washington, DC: World Bank Environment and Sustainable Development Series, 2017). The report is subject to the usual disclaimers
[71] Available at: http://unfccc.int/ghg_data/items/3800.php
[72] UNEP, Global Biodiversity Outlook 4 at 27.

environment reduces the exposure to extreme weather events including coastal flooding and wave surges.[73]

4-05 As the EU pushes towards the establishment of a low-carbon economy, it should be kept firmly in mind that the ocean plays a vital role in mitigating the effects of climate change, with some estimates suggesting that it absorbs as much as 93 per cent of excess heat and 26 per cent of global annual carbon dioxide emissions. By enhancing the role of the ocean in the carbon cycle and as a sink,[74] restoration can combat the loss of biodiversity, temper the effects of ocean acidification, as well as mitigate changes in the distribution and seasonal cycles of marine species including straddling and migratory fish stocks. Restoration thus accords fully with a central tenet of the 1992 UNFCCC, which acknowledges the role and importance of ecosystems as sinks and reservoirs of greenhouse gases.[75] The restoration of seagrass in particular enhances the capacity of coastal waters to sequester carbon dioxide and it is therefore significant that one of the case studies in the MERCES project is to test the potential of various restoration strategies on shallow soft bottom habitats in the marine environment at six sites across Europe's climatic gradient in the Baltic Sea, North Sea, Kattegat and Mediterranean Sea.[76] Similar studies undertaken under the auspices of the Blue Carbon Initiative have demonstrated that the restoration of highly productive seagrass meadows are part of the solution to climate change as they sequester and store carbon, thereby delivering key ecosystem services to coastal communities including protection from extreme weather events.[77]

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[73] European Commission, Climate change adaptation, coastal and marine issues, SWD(2013) 133 final, 16.4.2013.
[74] C. Duarte, J. Middelburg, N. Caraco, (2005): Major role of marine vegetation on the oceanic carbon cycle. *Biogeosciences* 2: 1–8.
[75] UNFCCC, Preamble. Art 1(8) defines "sink" as "any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere."
[76] On the restoration of seagrass, see, J. Greiner, K. McGlathery, J. Gunnell, B. McKee, Seagrass Restoration Enhances ``Blue Carbon'' Sequestration in Coastal Waters, *PLoS One*. 2013 Aug 14;8(8).
[77] J. Fourqurean, C. Duarte, H. Kennedy, N. Marbà, M. Holmer, M. Mateo, E. Apostolaki, G. Kendrick, D. Krause-Jensen, K. McGlathery, O. Serrano, "Seagrass ecosystems as a globally significant carbon stock" *Nature Geoscience* 5, 505–509 (2012). On the Blue Carbon Initiative, Murray, B.C., Pendleton, L. and Sifleet, S. (2011): State of the Science on Coastal Blue Carbon: A Summary for Policy Makers. In: Nicholas Institute for Environmental Policy Solutions Report NIR 11-06, P. 1-43.

At a global level, the loss of marine biodiversity is not fully comprehended or appreciated in the climate change debate.[78] Of particular concern in Europe's outer regions are the threats of ocean acidification and temperature increases leading to the further loss of coral reefs.[79] There are some indications that they could be among the first ecosystems lost in Europe's overseas territories as a result of climate damage.[80] Maintaining healthy ecosystems and restoring degraded reefs is therefore a priority for Europe's overseas entities.[81]

4-06 Similar to other regions of the world, restoration activities in Europe's regional seas, such as those explored under the MERCES project, can be viewed as both a policy and legal response to the environmental threats associated with pollution, over-exploitation of marine living resources, habitat destruction, the spread of invasive species, and the effects of climate change. All of the threats are cumulative in form and subject to on-going intensification over the past five decades.[82] Moreover, despite the adoption of complex legal instruments, the absence of recovery is cause for concern and highlighted by the European Commission's mid-term review of the *Biodiversity Strategy*, which notes that no significant progress has been made towards the attainment of 2020 biodiversity conservation targets. In the longer term, the planning and implementing of successful marine ecological programmes will become more pressing as biodiversity continues to decline exponentially in line with the deteriorating status of the marine environment across European regional seas.

4-07 The European Commission has pointed out that it is increasingly difficult to adopt an appropriate response to arrest the loss of biodiversity

[78] See note 2 *supra*.
[79] R. Sauter *at al.,* (2013) Impacts of climate change on all European islands, A report by the Institute for European Environmental Policy (IEEP) for the Greens/EFA of the European Parliament. Final Report. Brussels. 2013.
[80] *Ibid*.
[81] See: https://www.iucn.org/content/make-european-union-overseas-centre-action-biodiversity-and-climate-change.
[82] EEA Report No 2/2015, The State of Europe's Seas (Luxembourg: EEA, 2017), *passim*.

because of the major scientific deficit with the status of 80 per cent of species and habitats designated for protection under EU environmental instruments classified as unknown by the relevant scientific bodies in the Member States.[83] The mid-term review notes that despite the absence of restoration strategies at national and sub-national levels in the Member States, there is some evidence of improvements in ocean management and governance arrangements at regional levels in Europe's sea basins and adjacent seas.[84]

4-08 Overall, however, the scientific prognosis of future ocean health remains pretty bleak and the case supporting the concept of ocean recovery and the adoption of further marine restorative measures is thus beginning to gain traction, as is evident from the narrative that is now emerging in EU soft law and black letter instruments.

[83] COM(2015) 478, 2.10.2015, at 13.
[84] European Environmental Agency notes that or commercially exploited fish stocks, fishing pressure has been decreasing since 2007 in EU Atlantic and Baltic waters, with visible improvement in the status of the fished stocks. The number of assessed stocks in these waters fished above their maximum sustainable yield has fallen from 94% in 2007 to 41% in 2014. In contrast, 91% of assessed stocks in the Mediterranean were being overfished in 2014 (EC, 2014e). However, the total number
of commercially exploited stocks remains considerably higher than the number assessed. In the Black Sea the status of only seven stocks are known and five of them (71%) are overfished. See, The European environment | State and outlook 2015 at 174.

5. Advancing restoration globally by means of soft law

5-01 Similar to other specialist areas in international law,[85] instruments that are amenable to the characterisation of soft law are making an important contribution to the progressive development of international marine environmental law in general.[86] A contemporary trend in this regard is that the duty to restore natural capital is increasingly addressed in non-binding multilateral instruments concerning the protection and preservation of the environment.[87] Many of these instruments are declaratory in ambit and thus reflective of broad policy objectives goals without specifying how these are to be realised in practice. As such, they are not readily enforceable in character before international courts and tribunals, or under the compulsory dispute settlement provisions set out in Part XV of UNCLOS.[88] On the other hand, they capture the environmental aspirations of the international community and feed directly into various policy initiatives and projects launched by the EU institutions and the Member States including the MERCES project.

5-02 The global nature of these aspirations can be seen in the report from the 2012 United Nations Conference on Environmental Development (Rio+20) entitled, *The Future We Want*, which is largely declaratory in so far as it calls for "holistic and integrated approaches to sustainable development that will guide humanity to live in harmony with nature and lead to efforts to restore the health and integrity of the Earth's ecosystem.[89] On a similar theme, several decisions taken within the framework of the Convention on Biological

[85] Dinah Shelton, Commitment and Compliance: The Role of Non-Binding Norms in the International Legal System (Oxford: Oxford Univ. Press 2003); Kenneth Abbott and Duncan Snidal, "Hard and Soft Law in International Governance," International Organization 54(3) (2000): 421-56

[86]

[87] see: the Zero Net Land Degradation under the UNCCD, the wise use of wetlands under the Ramsar Convention on Wetlands, the four Global Objectives on Forests of the UNFF, as well as the Bonn Challenge of the Global Partnership on Forest Landscape Restoration.

[88] D. Bodansky, The OSPAR Arbitration of the MOX Plant Dispute in Belinda MacMahon Ed., The OSPAR Arbitration (Ireland v. United Kingdom) Award of 2003, (The hague: T_M_C Asser Press, 2009)

[89] paras 4, 40, 154, 158, 193, 201, 206 and 207 of UNCED.

Diversity[90] focus on the restoration of ecosystems including most notably the Hyderabad Call for a Concerted Effort on Ecosystem Restoration.[91] The latter calls upon a broad spectrum of public and private actors including international bodies, states, the banking sector, private and corporate donors, business consortia, indigenous and local community organizations, as well as representatives of civil society, to "make concerted and coordinated long-term efforts to mobilize resources and facilitate the implementation of ecosystem restoration activities on the ground for sustaining and Improving the health and well-being of humans and all other species with whom we share the planet." Instructively, the Hyderabad Call places emphasis on a range of activities that may also be applied to marine ecosystem restoration including highlighting the importance of implementing ecosystem restoration related provisions in other instruments and work. At the core of the Hyderabad Call is a science based approach aimed at understanding and addressing the causes of degradation and destruction, as well as identifying ecosystems that can be restored by affirmative action. The Call promotes the use of best practices and appropriate technologies, along with fostering further action that improves the resilience of ecosystems.

5-03 Many soft law instruments are used as a mechanism to give effect to legal obligations. An important example in point, the Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets provide the overall framework for the attainment of the Convention of Biological Diversity objectives by setting down specific targets for ecological restoration within tight deadlines. Target 14 of the Aichi Targets, for instance, requires the restoration of ecosystems that provide essential services by 2020, including services related to water, and contribute to health, livelihoods and well-being taking into account the needs of women, indigenous and local communities, and the poor and vulnerable. In the context of combatting the effects of climate change, target 15 sets down a specific quantitative objective of the restoration of at least 15 per cent of degraded ecosystems by the same year.

[90] COP Decisions IX/5, IX/18, X/31, XI/16, XI/24 and XII/19. See also the Bonn Challenge and New York Declaration.
[91]

5-04 The Aichi Biodiversity targets have been replicated and reinstated in other instruments including in Goal 14 of the 2030 Agenda for Sustainable Development. The latter provides a universal objective for the international community and calls for the conservation and sustainable use of the oceans, seas and marine resources and the implementation of the principle of sustainable development.[92] Notably, two specific targets in Goal 14 refer to restoration and set down the requirement to sustainably manage and protect marine ecosystems by taking restorative action in order to achieve healthy and productive oceans by 2020.[93] The objective of ending illegal unregulated and unreported fishing and destructive fishing practices and implementing science-based management plans, in order to restore fish stocks in the shortest time feasible must also be achieved by the same deadline.[94] These targets among 169 others frame the global policy agenda for the international community and provide a blueprint for the aspirations of humanity in the 21st century.[95]

5-05 In relation to the implementation of the concept of ocean recovery, the hortatory nature of the aforementioned non-binding instruments plays an important role in the crystallisation of normative rules and values within the public order that applies to the ocean, as well as by acting as a stimulus that informs state and regional best practices in relation to the restoration of the marine environment worldwide, and in Europe's regional seas most particularly. To this extent, they are making a significant contribution to the progressive development of international and EU law by mustering collaborative action on the part of the international community to undertake restoration activities as an integral objective of broader environmental decision-making at a global level in response to environmentally harmful activities in the interest of the common good and the basis of collective responsibility for environmental damage.

[92] A/RES/70/1 - Transforming our world: the 2030 Agenda for Sustainable Development
[93] Target 14.2
[94] Target 14.4
[95] F. Dodds, D. Donoghue, J. Roesch, *Negotiating the Sustainable Development Goals: A Transformational Agenda for an Insecure World* (Abingdon: Routledge, 2017) at xv.

6. EU policy backdrop: all roads lead to Nagoya and Paris

6-01 The public policy backdrop to marine restoration in the EU and Member States is shaped directly and indirectly by developments at the United Nations and in other multilateral fora since the Earth Summit in 1992. As a result, the policy considerations driving restorative action and projects such as MERCES are embedded in a strand of the EU's environmental policy on the conservation and maintenance of biodiversity more generally, as well as forming an unsung component in Europe's ambitious programme on climate action. Each element merits further consideration as they both support the implementation of the broader concept of ocean recovery.

6-02 The EU's distinctive biodiversity policy can be traced back to the late 1970s and the adoption of seminal instruments such as the Birds Directive. More recently it is closely associated with the millennium development goals and the initial objective of halting biodiversity loss by 2010, which was only achieved in relation to 17 percent of habitats and species and 11 per cent of ecosystems by the target date. During the International Year of Biodiversity 2010, the EU's Environment Council adopted a more strategic vision that "aims to protect, value and appropriately restore" biodiversity by 2050.[96] The justification for restorative action is very clear and based upon the intrinsic value of biodiversity so that it continues to contribute to human wellbeing and economic prosperity, along with the need to avoid catastrophic changes caused by its ongoing loss.[97] The holistic and aspirational nature of EU ambition is focused on living within the planet's ecological limits by 2050.[98] The future prosperity of Europe and a healthy environment is linked with the establishment of a "circular economy where nothing is wasted and where natural resources are managed sustainably, and biodiversity is protected,

[96] Council (Environment) conclusions on 15.03.2010, Biodiversity: Post 2010, 16.03.2010. Doc. 7536/10. Also see COM(2010) 4, 19.1.2010.
[97] Council (Environment) conclusions on 15.03.2010, at 4. COM(2011) 244, 3.5.2011 at 2.
[98] *Ibid.*

valued and restored in ways that enhance society's resilience".[99] In order to meet this vision as well as international commitments arising under the Convention on Biological Diversity, the EU adopted a strategic blueprint and plan of action in the form of an *EU Biodiversity Strategy to 2020* with specific targets to halt the loss of biodiversity including the degradation of marine ecosystems by 2020, to restore ecosystems in so far as feasible, and to step up to the EU contribution to averting global biodiversity loss.[100] The strategy is embedded in the aforementioned 7th Environmental Action Programme and in Europe's 2020 strategy.[101]

6-03 Notably the framework for EU restorative action in the marine environment is built around ambitious targets including completing a comprehensive network of protected areas in the marine environment by 2012,[102] the attainment of MSY by 2015 in all areas where EU vessels operate and through ecosystem fisheries management measures to support the attainment of good environmental status of all marine waters by 2020 in line with the scheme set down by the Marine Strategy Framework Directive.[103] Crucially, target 2 of the strategy mirrors the global commitments adopted in Nagoya in so far as it requires that ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems by 2020.[104] In the latter regard, the EU committed itself to setting priorities for restoration at sub-national, national and EU level by 2014.[105] Significantly, the strategy records a financial commitment by the European Commission to contribute to the cost of restoration of marine ecosystems,[106] and further notes that restorative action can create new skills, jobs and business opportunities.[107] The European Parliament in its resolutions on biodiversity also emphasised the economic

[99] *Ibid.*
[100] EU Biodiversity Strategy to 2020, Target 4 at 7.
[101] Council Decision No 1386/2013/EU, and COM(2010) 2020.
[102] Ibid. Target 1 and Action 1
[103] Target 4,
[104] Ibid., Target 2 and Action 6, at 5 and 13.
[105] Ibid., Action 6a
[106] Action 14(b) at 14-15.
[107] At 4.

benefits derived from restoration and called for the setting of a much higher restoration target reflecting the 2050 Vision.[108]

6-04 Reviewing the incremental development of EU policies and laws, it is easy to deduce that restorative action is perceived by the European institutions as an important limb in sustainable development and as a vital contribution in the battle against global biodiversity loss, as well as a mechanism that contributes to climate change mitigation and adaptation.[109]

6-05 In 2014, the Commission published a study on the setting of priorities for the restoration of ecosystems and their services in the EU, which concluded that the 15% target should apply to both the marine and terrestrial area.[110] In parallel with the rolling out of the EU's distinctive marine biodiversity strategy, restorative activities in Europe's regional seas must be viewed as a nascent but nonetheless significant component of its climate action programme. As is well known, there are major initiatives underway in the EU law-making institutions to make the EU the most climate responsible region in the world. The European Commission published an insightful paper on key issues pertaining to climate change adaptation in the coastal and marine environments in 2013.[111] The paper highlights the importance of adopting climate change strategies for the different European sea-basins and working with the regional seas governance arrangements to promote the resilience of marine ecosystems through a broad range of measures including the inclusion of climate change considerations in the management of maritime activities.[112] The need for trans-boundary cooperation and for further adaptation measures is a core aspect of EU policy but rests very much on the Member States commitment to implement secondary legislation including the

[108] EU Parliament Resolution of 20 April 2012: our life Insurance, our natural capital, an EU Biodiversity Strategy 2020. Para 49, 55 and 86.
[109] Council conclusions 13.12.2011, EU Biodiversity Strategy to 2020: towards implementation, 1, 4, 11, 17, 19 and 22. Council Doc. 18374/11.
[110] Ibid., at 21.
[111] European Commission, Climate change adaptation, coastal and marine issues, SWD(2013) 133 final, 16.4.2013.
[112] *Ibid*., at 18.

Habitats Directive, the Marine Strategy Framework Directive and the Maritime Spatial Planning Directive reviewed below.[113]

6-06 In pushing the climate change agenda forward, the EU institutions have sought to close scientific knowledge gaps so as to undertake better-informed decision-making, as well as to foster better cooperation between Member States and third countries to make Europe's regional seas more resilient to climate change. The concept of ocean recovery is thus closely aligned with the EU's commitment to implement the Paris Agreement by means of its climate and energy policies. The focus is on the attainment of three specific targets by 2030, namely: reduction of emissions by 40 per cent compared to the 1990 levels; ensuring at least 27 per cent of energy supply from renewable energy sources such as offshore wind; along with an ambitious 27 per cent improvement in energy efficiency. In relation to the ocean, there are several inter-related elements evident in EU policy. The first is mitigation by cutting emissions from shipping and supporting efforts at the IMO that are aimed at the adoption of a global emission reduction strategy by 2023.[114] The EU has also amended its monitoring, reporting and validation laws on GHG emissions from shipping using ports in the European Economic Area.[115] In addition, the EU is investing significantly in climate and ocean research under the Horizon 2020 research programme and on expanding supply from ocean energy sources.[116] As mentioned previously, a core element underpinning ocean regulatory commitments under the Paris Agreement is to enhance the resilience of marine and coastal ecosystems as the world's largest carbon sink.[117] In meeting the commitments, the European institutions support investment in natural capital through a number of fiscal programmes including the European maritime and fisheries fund.[118]

[113] *Ibid*., at 14-17.
[114] European Commission, Two years after Paris – Progress towards meeting the EU's climate commitments (Brussels, European Commission, draft November 2017).
[115] Ibid., at 23.
[116] Ibid., at 14-15, and 23.
[117] See note 15 supra.
[118] Ibid., at 15.

6-07 The EU policy on climate change is working and emissions were reduced by 23 per cent from 1990 to 2016 without impairing economic growth.[119] On the basis of current trends, the adverse effects of climate change need to be taken into further consideration in shaping the policies relating to marine resources, biodiversity, human health and maritime activities.[120] This is to be expected in view of the legal obligations arising under the Nagoya Protocol and Paris Agreement. Future policy efforts will undoubtedly concentrate on fighting climate change and decarbonising the economy with greater emphasis on the adoption of specific measures that are aimed at ocean recovery and marine ecological restoration in Europe's regional seas.

[119] Ibid., at 5.
[120] Ibid., at 23

7. Black letter law: multilateral agreement and regional treaties

7-01 The EU is an important legal actor and party to several international agreements that codify the duty to restore living resources, ecosystems and biodiversity in the marine environment.

a. LOS Convention and related treaties

7-02 The EU and the Member States are party in their own right to the LOS Convention, which according to the Court of Justice European Union forms an integral part of the European legal order.[121] One of the objectives of the LOS Convention is to establish a rules based legal order that promotes the conservation of living resources and the protection and preservation of the marine environment.[122] To this end, the EU and Member States must therefore uphold and implement its wide-ranging provisions including those that advance the restoration of fish stocks,[123] along with the duty to protect and preserve the marine environment.[124] The latter is a general obligation and can thus be used to justify the adoption of restorative measures by coastal States in sea areas within national jurisdiction and by competent international bodies and flag States beyond national limits.

7-03 On the one hand, other than the requirement of restoring species associated with fisheries harvested species,[125] there appears to be no general obligation under the LOS Convention to adopt biodiversity restoration measures in the exclusive economic zone or other maritime spaces within national jurisdiction. On the other hand, in the Southern Bluefin Tuna Cases, the Tribunal observed that "the conservation of the living resources of the

[121] Case C-459/03 *Commission v. Ireland* [2006] ECR I-4635, para. 82 citing inter alia: Case C-344/04 IATA and ELFAA [2006] ECR I-403, para. 36. The Court has since held that the FAO Compliance Agreement, the Fish Stocks Agreement and the third country fishery partnership agreements are all integral parts of the EU legal order, see Case C-73/14, *Council of the European Union v European Commission*, 6 October 2015, para. 69.
[122] Preamble, LOS Convention.
[123] Articles 61(3)-(4), LOS Convention.
[124] Article 192, LOS Convention.
[125] Article 61(4), LOS Convention.

sea is an element in the protection and preservation of the marine environment."[126] Marine biodiversity and ecosystems are a fundamental and integral part of the marine environment. Accordingly, it is not farfetched to consider ecosystem restorative measures and the concept of recovery as fitting within the penumbra of the wider environmental protect and preserve obligation under the Convention. Moreover, in taking measures to prevent pollution of the marine environment, coastal States are obliged to take measures 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".[127] The latter is also a general obligation under the Convention, that applies *erga omnes*, and can therefore be used as a legal plinth for restorative action in all marine spaces including the high seas. In formulating standards and recommended practices on restoration, the EU and States must cooperate with competent international and regional bodies taking into account regional marine environmental features.[128]

7-04 The LOS Convention provides for liability for pollution damage and specific regimes have been adopted for civil liability under the auspices of the IMO for oil pollution damage, which are clearly germane to remediation and rehabilitation of sites that have been damaged by vessel source pollution.[129] There are provisions in the LOS Convention and the 1994 Implementation Agreement on responsibility to ensure compliance and liability for damage from seabed mining.[130] Significantly, in the context of liability for damage to the marine environment as a result of seabed mining activities, the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea advised in the *Area Advisory Opinion* that "the form of reparation will depend on both the actual damage and the technical feasibility of restoring the situation to the

[126] Southern Bluefin Tuna (New Zealand v. Japan; Australia v. Japan), Provisional Measures, Order of 27 August 1999, ITLOS Reports 1999, p. 280, at p. 295, para. 70.
[127] Article 194(5), LOS Convention.
[128] Article 197, LOS Convention. According to the Tribunal, the duty to cooperate is a fundamental principle in the prevention of pollution of the marine environment under Part XII of the Convention and general international law, MOX Plant (Ireland v. United Kingdom), Provisional Measures, Order of 3 December 2001, ITLOS Reports 2001, p. 95, at p. 110, para. 82.
[129] Article 235, LOS Convention.
[130] Article 139, LOS Convention.

status quo ante."[131] The obligation to restore is thus linked to technical feasibility.[132]

7-06 The duty to restore fish stocks arises under the 1995 Fish Stocks Agreement arises as a principle and as a substantive legal obligation in implementing the precautionary approach.[133] In the SRFC Advisory Opinion, the Tribunal observed that the "ultimate goal of sustainable management of fish stocks is to conserve and develop them as a viable and sustainable resource."[134] The Tribunal was also of the view that fish stock development under the LOS convention could include stock restoration to preserve it as a long-term viable resource.[135]

b. Convention on Biological Diversity and other multilateral treaties

7-07 The LOS Convention has to be read in light of the obligations that arise under international treaties and agreements that are binding on the EU and the Member States. Notable in this regard are the obligations that arise under the Convention on Biological Diversity include the duty to restore and rehabilitate degraded ecosystems with a view to promoting the recovery of threatened species through the development and implementation of plans or other management strategies.[136] The CBD applies to sea areas under national jurisdiction and sets down an obligation of conduct which informs the restoration strategies adopted by the Member States and the EU including specific conservation and biodiversity instruments. The CBD can thus be used to advance the concept of ocean recovery and the implementation of specific restorative action at local and regional seas scales. CBD complements many other treaties including the Convention on Migratory Species of Wild Animals requires the restoration of listed migratory species to

[131] Case No 17, Area Advisory Opinion (2011) ITLOS Rep 10, paras 197.
[132] This is also a feature of EU law, see discussion of Marine Strategy Framework Directive.
[133] Articles 5(b)-(e) and 6(4), and Article 4, Annex II, 1995 Fish Stocks Agreement.
[134] Case No 21, SRFC Advisory Opinion, Apr. 2, 2015, para. 190.
[135] Ibid, para. 198.
[136] Article 8(f)(e), Convention on Biological Diversity.

a favourable conservation status and has been applied in Europe's regional seas to restore European eel and other threatened species.[137]

c. Regional seas conventions

7-08 Marine restoration obligations arise in various forms under the regional seas agreements concerning the pollution of the marine environment including the OSPAR, Helsinki, Barcelona and Bucharest Conventions. The European Union and relevant Member States are parties to such agreements and thus bound by the rights and duties contained therein. As a matter of practice, EU nature conservation law, such as the Marine Strategy Framework Directive, make an important contribution to the attainment of the biodiversity restoration obligations that arise under the Conventions. There are other legal considerations that stress the regulatory importance of the regional agreements for the purpose of marine ecosystem restoration. Notably, the geographical scope of the OSPAR and Barcelona Conventions applies in areas beyond national jurisdiction, which is often a significant consideration in the planning and implementing of restorative measures on trans-boundary basis for migratory and ecosystems that extend beyond national jurisdiction into deepwater environments. In addition, the regional agreements are the most suitable mechanism for collaborating with third countries in achieving restoration objectives at regional sea level or in some instances at a sub-regional scale.

d. Atlantic and Arctic: *OSPAR Convention*

7-09 Although the treaty language is couched in terms of feasibility, the OSPAR Convention sets down an obligation to conserve marine ecosystems and the restoration when practicable of marine areas that have been

[137] Art V.1, Convention on Migratory Species

adversely affected by human activities.[138] What constitutes practicability is not defined in the Convention or related instruments.

7-10 In relation to operational conservation and restoration measures, the OSPAR legislative framework and representative network of MPAs is very much informed by obligations that arise under the Convention on Biological Diversity. Specifically, the OSPAR Commission is obliged to identify and develop restorative measures related to specific areas, sites, species, habitats and ecosystems.[139] OSPAR has relied upon its treaty mandate to adopt several recommendations to restore common skate species complexes, angel shark, orange roughy, *lophelia pertusa* reefs and coral gardens in the OSPAR Maritime Area.[140] A notable feature of this approach to regional restoration is that it is also concerned with the implementation of obligations arising under other multilateral treaties. Several of the species that are subject to restorative measures are on the IUCN Red List of Threatened Species, such as white skate, with others such the basking shark listed for protection under Appendices I and II to the UN Convention on the Conservation of Migratory Species of Wild Animals. The approach by the OSPAR Commission is predicated on setting down an obligation of conduct, so that each Contracting Party must consider introducing a range of measures including the adoption of national legislation, conservation measures, information campaigns, area based management tools, recovery plans and scientific monitoring programmes.[141]

7-11 There is also an obligation placed on OSPAR Contracting Parties to act collectively by requesting scientific advice from ICES, promoting inclusion of some of the species in European and international biodiversity conventions, and to work with fisheries management authorities (the EU and NEAFC) on safe release mechanisms, studies and in the taking of conservation

[138] Art 2(1)(a) and Article 2, Annex V, OSPAR Convention.

[139] OSPAR Biodiversity Strategy

[140] Article 3(1)(b)(ii), Annex V, OSPAR Convention. OSPAR Recommendations 2010/06, 2010/07, 2010/08 and 2010/09.

[141] See, for example, OSPAR Recommendation 2010/6 on furthering the protection and restoration of the common skate species complex, the white skate, the angel shark and the basking shark in the OSPAR maritime area, OSPAR 10/23/1-E, Annex 28.

measures.[142] Clearly, the focus is on the restoration of habitats and species and not on the concept of ocean recovery *per se*. What is important nonetheless for the purpose of this report is that a duty to restore arises when the species or habitat is endangered. Furthermore, there is an obligation on Contracting Parties to cooperate and coordinate in adopting and implementing regional trans-boundary restorative measures. OSPAR also cooperates with other international bodies including the Barcelona, Helsinki and Bucharest Conventions in sharing conservation and restorative best practices, along with reviewing how good marine environmental status is being achieved in other regional seas.

7-12 The OSPAR Commission has not formulated regional standards to measure the success or otherwise of restoration measures. This is not a major weakness on the regulatory scheme as it undertakes regular scientific assessment of the status of the marine environment and reviews the implementation of the ecosystem approach periodically.[143] The results of the MERCES project could prove useful in the future development of regional standards or protocols to measures the success of restoration efforts in the marine environment.

d. Baltic Sea: HELCOM Convention

7-13 A primary feature of the HELCOM Convention is the commitment of Contracting Parties to assure the ecological restoration, the self-regeneration of the marine environment and the preservation of the ecological balance of the Baltic Sea.[144] The precise legal status of ecological restoration under the regional treaty is unequivocal in so far it is prescribed as both a fundamental principle and legal obligation under the HELCOM Convention.[145] For the purpose of applying the principle and discharging the obligation, HELCOM Contracting Parties have adopted a Joint Action Plan to restore the Baltic Sea

[142] *Ibid.*
[143] See OSPAR Intermediate Assessment 2017.
[144] Preamble, HELCOM Convention.
[145] Article 3, HELCOM Convention.

to a sound ecological balance.[146] As part of the plan, specific measures and restoration actions are implemented by HELCOM to restore habitats and species including anadromous species such as salmon and sea trout.[147] Under the Action Plan, the obligations extend to restoring and maintaining seafloor integrity at a level that safeguards the functions of ecosystems. Specific targets have also been set for restoring the population of harbour porpoises in the Baltic Sea in line with the obligations that arise under the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas.[148]

7-14 In order to advance biodiversity conservation and restoration objectives, close to 12 per cent of the overall spatial area of the Baltic Sea was designated for protection as MPAs in 2016.[149] Management plans were in place for only 67 per cent of MPAs and the assessment of their effectiveness had yet to be undertaken in 2017.[150] The network was deemed unrepresentative and not yet ecologically coherent by HELCOM.[151] Thus, it appears premature to judge how well it contributes to the restoration objectives under the HELCOM Treaty, Action Plan and other conservation measures.[152] On the other hand it is notable that HELCOM Commission reported nearly a decade ago that active restoration methods were already in place for "wetlands, the reconstruction of spawning sites and migratory routes for migrating fish species, and the re-establishment of water circulation in artificially enclosed bays".[153] Moreover, all of the aforementioned were implemented with a view to reinstalling "the physical elements necessary for

[146] Baltic Sea Action Plan
[147] HELCOM (2017): First version of the 'State of the Baltic Sea' report, June 2017, to be updated in 2018. Available at: http://stateofthebalticsea.helcom.fi
[148] ASCOBANS Conservation Plan for the Harbour Porpoise Population in the Western Baltic, the Belt Sea and the Kattegat. Available at: http://www.ascobans.org/sites/default/files/document/HarbourPorpoise_ConservationPlan_WesternBaltic_MOP7_2012.pdf
[149] HELCOM 2016. Ecological coherence assessment of the Marine Protected Area network in the Baltic. Balt. Sea Environ. Proc. No. 148
[150] *Ibid.* at 5.
[151] *Ibid.* at 5.
[152] *Ibid.* at 6.
[153] HELCOM, 2009 Biodiversity in the Baltic Sea – An integrated thematic assessment on biodiversity and nature conservation in the Baltic Sea. Balt. Sea Environ. Proc. No. 116B, at 158.

the recovery of natural communities and populations".[154] Although the regional framework is firmly orientated towards ensuring that restoration is a duty of conduct, it is significant that the Baltic Commission consider restoration as both costly and a 'last resort' option.[155] Importantly, based upon the limited experience within the region, the HELCOM Commission have acknowledged that it is a useful tool in marine conservation and biodiversity recovery efforts.[156]

7-15 The overall focus and regulatory trends under the HELCOM Convention and related instruments is proactive and aimed at restoring the good ecological status of the Baltic Sea by 2021.[157] Similar to other regional sea basins in Europe, however, the specific content of MPA management plans, as well as national and regional laws, will be crucial to achieving long-term recovery outcomes. Importantly the State of the Baltic Sea Report (2107) provides an important regional baseline against which restoration targets under the SDGs can be measured, as well as the success of the concept of ocean recovery.[158]

e. Mediterranean Sea Barcelona Convention

7-16 Although the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) does not have an express treaty reference to the duty of marine ecological restoration, the focus of the regional arrangements is very much on marine biodiversity conservation. Further detail may be found in the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean, which is aimed specifically at the maintenance and protection of ecosystems and biodiversity in the Mediterranean Sea. The general legal

[154] *Ibid.*
[155] *Ibid.*
[156] *Ibid.*
[157] Baltic Sea Action Plan
[158] HELCOM, SDGs: Measuring Progress for the Same Targets in the Baltic Sea (Helsinki: HELCOM, 2017). Available at: http://www.helcom.fi/Lists/Publications/BSEP150.pdf

and policy orientation is geared towards the adoption and implementation of protection, preservation and management measures, as well as the concept of sustainable development under many instruments including the Strategic Action Programme for the Conservation of Biological Diversity in the Mediterranean Region and the Mediterranean Strategy on Sustainable Development. Similar approaches underpin the UNEP/MAP Mid-Term Strategy 2016-2021, which provides a blueprint for marine and coastal environmental protection in the Mediterranean Sea for the five-year period up to the year 2021.

7-17 The progressive evolution of restorative action in the Mediterranean Sea can be traced to the adoption of the UNEP/MAP programme on the implementation ecosystem approach pursuant to which Contracting Parties agreed to the goal of restoring the structure and function of marine and coastal ecosystems, where practicable, in order to achieve and maintain good ecological status of the marine environment while allowing for sustainable use. In addition to reducing pollution, Contracting Parties also committed themselves to the specific obligation of preserving, enhancing and restoring "a balance between human activities and natural resources in the sea and the coasts and reduce their vulnerability to risks. These goals of course dovetail and reflect the objective of achieving good environmental status under the Marine Strategy Framework Directive.[159]

7-18 The commitment towards affirmative restoration measures under the Barcelona system can be found expressly and implicitly in several soft law instruments including the Regional Working Programme for the Coastal and Marine Protected Areas in the Mediterranean Sea including the High Sea. Specific measures can be found in eight action plans addressing the conservation of monk seal, cartilaginous fish, marine vegetation, marine turtles, bird species, as well as habitats and species associated with certain geomorphological and oceanographic features.[160] Indeed, one of the

[159] See discussion *infra*.
[160] Regional Working Programme for the Coastal and Marine Protected Areas in the Mediterranean Sea, available at: http://www.medmpaforum2012.org/en/node/1626.

objectives of the Dark Habitats Action Plan is to encourage the natural restoration of degraded habitats by reducing human impacts.[161] Overall, however the approach in the action plans is about the conservation of individual species or groups of species, as well as physical features. Considerable emphasis is placed in the action plans on the designation of MPAs and the adoption of legislation on impact assessment, along with using other regulatory tools such as fisheries management measures to reduce anthropogenic impacts.[162] The results of a scientific study on the artificial restoration of cystoseira species concluded that conservation measures must be embedded within large-scale management plans, restorative actions and appropriate enforcement of protected areas.[163]

[161] See, for example, UNEP, Action Plan for the conservation of habitats and species associated with seamounts, underwater caves and canyons, aphotic hard beds and chemo-synthetic phenomena in the Mediterranean Sea. Available at: http://www.rac-spa.org/sites/default/files/action_plans/dark_habitats_ap.pdf
[162] *Ibid*, at 12-13.
[163] F. Gianni, F. Bartolini, L. Airoldi, E. Ballesteros, P. Francour, A. Meinesz, T. Thibaut, and L. Mangialajo,. Conservation and restoration of marine forests in the Mediterranean Sea and the potential role of Marine Protected Areas (2013) 4 *Advances in Oceanography and Limnology* 83-101.

8. **Restoration and EU marine environmental law**

8-01 In contrast to international law, the EU has its own legal system founded on the rule of law, which the European Courts and the courts in the Member States are bound to apply.[164] The EU enjoys legal competence to adopt environmental measures including regulatory measures that are aimed at the conservation and restoration of marine ecosystems.[165] In principle, regulatory measures to achieve environmental recovery objectives can be based upon various EU treaties provisions pertaining to the environment, fisheries, transport, energy, products, industrial and internal market policies.[166] In practice, however, EU policies and treaty objectives to improve and restore natural capital are implemented by means of secondary legislation in the form of directives, regulation and decisions. Notable examples of this approach that codify the obligation to restore polluted waters and ecological conditions can be found in the Water Framework Directive,[167] the Invasive Species Regulation,[168] Bathing Water Quality Directive, the regulatory code underpinning the common fisheries policy, as well as in more specific marine environmental protection instruments, namely: the Marine Strategy Framework Directive, Birds and Habitats Directives, and the Maritime Spatial Planning Directive. Additionally, the EU can give effect to international treaty obligations and has done so in many areas including most notably in relation to climate change and the protection of high seas biodiversity.[169] Furthermore, EU legislative measures aimed at ecosystem restoration should not be viewed in isolation because they can be complemented by international, regional, national and local legislation adopted in and by the Member States.

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[164] Case 6/64 *Flaminio Costa v E.N.E.L.* [1964] ECR 585.
[165] Article 3 Treaty on European Union, Article 191 treaty on the Functioning of the European Union (TFEU).
[166] On the applicability of other treaty provisions, see, L. Kramer, EU Environmental Law, 8th Ed., (London: Sweet and Maxwell, 2016) 5-8.
[167] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. OJ L 327, 22.12.2000, 1–73.
[168] Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species. OJ L 317, 4.11.2014, 35–55.
[169] See, for example,

a. Normative basis: EU treaties and secondary legislation

8-2 Significantly from a legal perspective, ecological restoration activities in European regional seas can contribute to the attainment of the high level environmental objectives set out in the foundation treaties, which are primary sources of law and thus at the very apex of the European legal order. The treaty provisions are unambiguous in so far as they necessitate the integration of environmental protection requirements into the definition of all EU policies and activities with a view to promoting the principle of sustainable development.[170] Specifically, restoration activities can help discharge core treaty objectives by improving the quality of the environment, protecting human health through food security and ensuring prudent use of natural resources, as well as being amendable to use as an effective mechanism that promotes international collaboration in addressing worldwide and regional environmental problems including the effects of climate change.[171] Moreover, there are other strong juridical links between restoration and EU treaty law, which codifies four normative principles: the polluter pays, prevention, precaution and the rectification of environmental damage at source.[172] Marine ecological restoration activities such as those undertaken under the MERCES project can be firmly rooted in the latter principles on the grounds that environmental problems are best undertaken by a combination of prevention, precautionary and rectification measures.[173] Accordingly, although protection and preservation remain the principal focus of EU laws and policies, restoration as a regulatory tool can nonetheless be viewed and justified as an implicit normative response under EU treaty law that is aimed at ameliorating environmental impairment and mitigating the effects of climate change.

b. Restoration and the Marine Strategy Framework Directive

8-03 The Marine Strategy Framework Directive (MSDFD) is the principal European legal instrument that advances ecological restoration as a

[170] Article 6, TFEU.
[171] Article 191(1), TFEU.
[172] Article 191(2), TFEU.
[173] The European environment: State and outlook 2015 at 158-159.

normative imperative that aims to close governance gaps by forging a regulatory continuum between the Member States, the EU and international bodies as well as other stakeholders in their interactions with marine biodiversity, ecosystems and climate.[174] The Directive is a sophisticated and in many ways a unique instrument that requires the maintenance and restoration of the marine environment, so that European seas are clean, healthy and productive.[175] In order to achieve this ambitious goal, the MSFD requires the application of the ecosystem approach for the attainment of good environmental status of all European waters by 2020.[176] In a highly technical and prescriptive approach to the determination of the state of the marine environment, the Directive sets down 11 qualitative descriptors on biodiversity, fisheries, food webs, pollution, energy, as well as chemical and physical features of the marine environment.[177]

8-04 Restoration of degraded marine ecosystems is a fundamental objective of this complex instrument, which requires trans-European regional cooperation on the setting of targets, along with the implementation of monitoring and management programmes to achieve the overall objective of good environmental status.[178] Specifically, the Directive mandates the development and implementation of marine strategies by the Member States that restore marine ecosystems in areas where they have been adversely affected,[179] so that they have the capacity to respond to human-induced

[174] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive) OJ L 164/19, 25.6.2008. Amended by Commission Directive See, inter alia: R. Long, "The EU Marine Strategy Framework Directive: A new European approach to the regulation of the marine environment, marine natural resources and marine ecological services", (2011) 29(1) *Journal of Energy and Natural Resources Law* 1-45.
[175] Recital 3, Preamble, Article 3(5), Directive 2008/56/EC.
[176] Article 1, Directive 2008/56/EC.
[177] Article 1(1), 3(5), 9(1), 9(3) 24 and Annex I, Directive 2008/56/EC. Commission Decision (EU) 2017/848 of 17 May 2017 laying down criteria and methodological standards on good environmental status of marine waters and specifications and standardised methods for monitoring and assessment, and repealing Decision 2010/477/EU, OJ L 125, 18.5.2017, 43–74.
[178] Articles, 6, 10, 11 and 13, Directive 2008/56/EC.
[179] Articles 5, Directive 2008/56/EC. Commission Directive (EU) 2017/845 of 17 May 2017 amending Directive 2008/56/EC of the European Parliament and of the Council as regards the indicative lists of elements to be taken into account for the preparation of marine strategies OJ L 125, 18.5.2017, 27–33.

changes and are capable of delivering marine goods and ecological services that are enjoyed by present and future generations.[180] In particular, marine strategies shall prevent and reduce inputs of the marine environment,[181] so as to ensure that there are no significant impacts on or risks to marine biodiversity, ecosystems, human health or legitimate uses of the sea.[182] Moreover, the programme of measures adopted by Member States to realise the objectives must include spatial protection measures that contribute to marine protected areas established under EU nature conservation instruments and within the framework of international and regional agreements to which the EU and Member States are parties.[183] The Directive thus requires EU and the Member States to work with third States (non EU Member States) and international bodies in undertaking restoration activities both within and beyond national jurisdiction within the framework of international and regional law.[184]

8-05 The range measures that can be adopted to fulfil the objectives of the Directive include input and output controls, economic incentives, as well as mitigation remediation and management tools that guide human activities to restore damaged components of marine ecosystems.[185] The reach of the Directive across sector policies and governance arrangements that impinge upon the quality of the marine environment is considerable including the maritime transport, offshore energy and fisheries policies. Restoration measures can be adopted under the common fisheries policy that are aimed at closing fisheries in discrete areas with a view to maintaining and restoring the integrity, structure and functioning of ecosystems.[186] The onus rests with the Member States who are required to establish environmental targets and monitoring programmes that enable the evaluation of the state of the marine environment periodically.[187] Significantly, when deviations from the desired

[180] Article 1(2)(a) and 1(3), Directive 2008/56/EC.
[181] Art. 3(8) in the MSFD),
[182] Article 1(2)(b), Directive 2008/56/EC.
[183] Article 13(4) and (5), Directive 2008/56/EC
[184] *Ibid.*
[185] Articles 13(1) and 24, and Annex VI(7), Directive 2008/56/EC.
[186] Recital 39, Preamble, Directive 2008/56/EC.
[187] Articles 11(1) and 24, Directive 2008/56/EC.

status range are identified by such programmes, Member States must take corrective measures that restore good environmental status.[188] Importantly, should Member States to wish to avail of the relatively expansive exception clauses in the Directive pertaining to responsibility, natural causes, *force majeure*, overriding public interest and natural conditions, they must still take *ad-hoc* measures to prevent further environmental degradation and to mitigate adverse impacts.[189] Although not explicitly mentioned in the Directive, *ad-hoc* measures could of course be aimed at facilitating ecosystem recovery and improving the resilience of biodiversity.

8-06 Is the MSFD a game changer in relation to the restoration of the European marine environment? Undoubtedly, by codifying the concepts of conservation, sustainable use and restoration, the MSFD upholds three guiding principles in relation to practice of ecological restoration in so far as the Directive aims to be effective by establishing and maintaining ecosystem values, efficient by maximising the beneficial outcomes and inclusive by promoting engagement with stakeholders.[190] Significantly, marine strategies and programme of measures adopted under the Directive must identify how best to adapt and to improve ecosystem resilience to the effects of climate change,[191] taking into account scientific and technological developments. The MERCES project can thus make a significant contribution to the testing of scientific and socio-economic restoration tools for the purpose of implementing the Directive.

8-07 The key element regarding its potential to address environmental degradation hinges upon the identification and implementation of management measures and actions by the Member States in order to achieve or maintain good environmental status. The instrument allows for an adaptive approach and establishes iterative cycles of assessment and management

[188] Annex V(4), Directive 2008/56/EC.
[189] Article 14, Directive 2008/56/EC.
[190] T. McDonald, G. Gann, J. Jonson, K. Dixon International standards for the practice of ecological restoration, including principles and key concepts (*Washing DC: SER, 2016) at 9; K. Keenleyside, N. Dudley, S. Cairns, C. Hall, and S. Solton, Ecological restoration for protected areas: principles, guidelines and best practices, (Gland: IUCN, 2012)
[191] Recital 42, Preamble, Directive 2008/56/EC.

measures. There is slow progress in implementation with initial report by the European Commission noting that much remained to be done from a governance perspective and called for greater coordination of Member States' monitoring and management measures, more ambitious regional cooperation and a clearer understanding of the roles, responsibilities and obligations of all parties.[192] Subsequently a common implementation strategy was adopted to facilitate regional cooperation and a more coherent approach within the EU to the implementation of the Directive.[193] In 2017, the Commission published a report assessing Member States' monitoring programme, which highlighted that just 12 per cent of monitoring activities undertaken by the Member States focus on the effectiveness of measures that mitigate human pressures on the marine environment.[194] Moreover, the Commission considered that the monitoring programmes established by the Member States did not meet fully the requirement of the Directive but they anticipate that this shortcoming will be addressed by the deadline of 2020.[195] There is little information in the report regarding specific restoration actions adopted by the Member States to fulfil the requirements of the Directive, other than the Commission requested that Croatia and Bulgaria strengthen the socio-economic analysis so as to allow more detailed assessment of the costs associated with the restoration of degraded ecosystems.[196] Nonetheless it is notable that Member States highlighted that the pressures and impacts caused by climate change and ocean acidification are some of the most pressing transboundary matters that need urgent attention under the MSFD.[197]

8-08 The importance of the MSFD to the implementation of the concept of ocean recovery cannot be overstated, as it provides a very solid legal plinth for the adoption of concrete restorative measures at regional seas and sub-

[192] European Commission, The first phase of implementation of the Marine Strategy Framework Directive (2008/56/EC), COM(2014) 97 final, 20.2.2014 at 10.
[193] Common Implementation Strategy,
[194] European Commission, Report to the European Parliament and the Council assessing Member States' monitoring programmes under the Marine Strategy Framework Directive, COM(2017) 3 final, 16.1.2017, at 4.
[195] Ibid., at 13-14.
[196] The Commission report is accompanied a Staff Working Document, which provides technical details on Member States performance, see SWD(2017) 1 final, 16.1.2017 98 and 101
[197] Ibid, at 13.

regional levels, that go well beyond the scale of the MERCES project. What is more, should the EU and the Member States consider it necessary to upscale future restoration projects, particularly ones that aimed at mitigating or adapting to the effects of climate change, the MSFD can be applied to revise, strengthen and improve the implementation of EU legislative instruments and policies for the purpose of restoring the environmental status and functioning of marine ecosystems. As a minimum, this extends to the substance and form of fisheries, nature conservation and spatial planning legislation, as well as measures adopted under the regional seas programmes for the Atlantic, Arctic, Baltic, Mediterranean and Black Sea. Indeed, any such initiative will allow complementary legislative actions to be termed "restorative" where they are shaped by the normative principles and values underpinning ecological restoration.[198] The strengths and weaknesses of this approach, as a normative paradigm shift, will only become apparent when specific restoration programmes are in place at a sufficient scale and there is scientific evidence of ecosystem recovery.

c. *Duty to restore: EU water code*

8-09 The EU prohibits the pollution of the marine environment from land-based and offshore sources.[199] For this purpose, apart from the MSFD reviewed above, the EU has adopted an intricate web of secondary legislation that codify the duty to restore the environmental status of coastal waters. The scope of instruments reaches out from the terrestrial environment to the deep ocean and thus contribute to improving the resilience of the marine environment and form a core element of the EU's strategy to adapt to the

[198] T. McDonald, G. Gann, J. Jonson, K. Dixon International standards for the practice of ecological restoration, including principles and key concepts (*Washing DC: SER, 2016) at 31.

[199] Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources, OJ L 375, 31/12/1991; Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment, OJ L 135, 30/05/1991; Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control), OJ L 334, 17/12/2010; Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, OJ L 330, 5/12/1998; Directive 2006/7/EC of the European Parliament and of the Council of 15 February 2006 concerning the management of bathing water quality, OJ L 64, 4/3/2006.

effects of climate change. Specifically, the Water Framework Directive requires Member States to restore polluted surface waters and the ecological conditions necessary to achieve good environmental status in all surface waters by 2015,[200] with some deadlines extended to 2021 and 2027 for some chemical substances.

8-10 The management and regulatory scheme advanced by the Directive is based primarily on river-basin catchments but extends in geographical scope into the marine environment to a distance of 1 nautical mile for the restoration of the ecological status of surface waters, and a further 12 miles for the restoration of chemical status. A sister instrument, the Floods Directive,[201] forms a central pillar in Europe's response to the increase response to the likelihood of flooding as a result of climate change. Member States are required to undertake risk assessment and to prepare flood risk management plans including adopting measures that maintain and restore flood plains in the coastal environment. Similar to the MSFD, the Water Framework Directive and the Floods Directive are at the end of the first phase of their iterative implementation cycle and Member States are thus at a crucial stage in addressing the deteriorating status of the European coastal environment.[202] Markedly, the aforementioned instruments can be used to promote the science and practice of ecological restoration as a vital tool in the conservation and sustainable use of coastal and marine ecosystems, as well as in the uphill battle to combat the destructive effects of climate change including extreme weather events.

[200] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy. OJ L 327, 22.12.2000, 1–73. It is complemented by two so-called daughter directives, the Groundwater Directive (2006/118/EC) and the Environmental Quality Standards Directive (2008/105/EC).
[201] Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks, OJ L 288, 6/11/2007.
[202] European Commission, The Water Framework Directive and the Floods Directive: Actions towards the 'good status' of EU water and to reduce flood risks, COM(2015) 120 final, 9.3.2015.

d. Restoration and the battle against invasive alien species

8-11 A duty to restore both terrestrial and marine ecosystems arises under the EU regulation that aims to prevent and manage the deliberate and accidental introduction and spread of invasive alien species in the natural environment.[203] This threat is anticipated to intensify with climate change and represents one of the greatest threats to biodiversity and ecosystem resilience in Europe.[204] EU policies and laws on counteracting the threat should not be viewed in isolation as they are rooted in similar provisions in the Convention of Biological Diversity and the Convention on the Conservation of European Wildlife and Natural Habitats.[205] Briefly stated, the Invasive Species Regulation provides a framework for the adoption of restoration measures to strengthen ecosystem resilience and to enhance the conservation status of species and their habitats in accordance with the EU legislative code applicable to marine environment.

8-12 Apart from establishing management measures, Member States must carry out appropriate restoration measures to assist the recovery of an ecosystem that has been "degraded, damaged, or destroyed by invasive alien species" unless the results of an economic cost benefit analysis indicate otherwise.[206] The restorative measures in question must be capable of building ecosystem resistance and preventing re-occurrence of damage.[207] Importantly, the instrument provides explicitly that the "costs of such restoration measures should be recovered in accordance with the polluter

[203] Regulation No 1143/2014 of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species, OJ L 317/35, 4.11.2014. Under the regulation, 'alien species' are defined to mean "any live specimen of a species, subspecies or lower taxon of animals, plants, fungi or micro-organisms introduced outside its natural range; it includes any part, gametes, seeds, eggs or propagules of such species, as well as any hybrids, varieties or breeds that might survive and subsequently reproduce". The term "'invasive alien species' means an alien species whose introduction or spread has been found to threaten or adversely impact upon biodiversity and related ecosystem services.
[204] Recital 3, Regulation No 1143/2014.
[205] Article 8(h), Convention of Biological Diversity. Council Decision 93/626/EEC of 25 October 1993 concerning the conclusion of the Convention on Biological Diversity, OJ L 309, 13.12.1993, 1; Council Decision 82/72/EEC of 3 December 1981 concerning the conclusion of the Convention on the conservation of European wildlife and natural habitats, OJ L 38, 10.2.1982, p. 1.
[206] Article 20, Regulation No 1143/2014.
[207] *Ibid.*

pays principle" and in line with the requirements of the EU's environmental liability regime.[208] Furthermore, Member States are compelled to adopt penalties that are effective, proportionate and dissuasive to ensure compliance with the regulation and the management measures adopted thereunder. As many invasive species are transported unintentionally by shipping,[209] the regulation promotes mandatory and voluntary measures derived from the implementation of the International Maritime Organisation's Guidelines for the Control and Management of Ships' Biofouling. Member States are also encouraged to ratify the International Convention for the Control and Management of Ships Ballast Water and Sediments.[210] The latter requires Contracting Parties including EU Member States to co-operate under the auspices of the IMO in addressing threats to marine ecosystems and biodiversity in ABNJ.[211]

e. *Restoration: EU nature conservation instruments*

8-13 The legal obligation to restore species, habitats and ecosystems in the marine environment also arises under two of the oldest EU nature conservation instruments, the Wild Birds and Habitats Directives, which are aimed at the maintenance or restoration of habitats and species at a "favourable conservation status".[212] The latter status is considered to have been attained when habitats and species satisfy prescribed requirements regarding habitat range structure, functions and population dynamics.[213]

[208] Recital 26, Preamble, Article 21, Regulation No 1143/2014. Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage OJ L 143, 30.4.2004, 56.
[209] Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions - Towards an EU strategy on invasive species, COM (2008) 0789 final, para 3(2)
[210] Recital 21, Regulation No 1143/2014.
[211] Article 2(9), Convention for the Control and Management of Ships Ballast Water and Sediments.
[212] Article 2(2), Council 92/43/EEC. The European Court of Justice has upheld the application of the instruments to the marine environment in ….
[213] Article 1(a)(e) and (i), Council 92/43/EEC. The EU has developed species action plans to restore favourable species to favourable conservation status across their range in Europe. See, inter alia: A Cliquet, K. Decleer, H. Schoukens,'Restoring Nature in the EU: The Only Way Is Up?' in C. Born, A. Cliquet, H. Schoukens, D. Misonne, G.Van Hoorick (eds), The Habitats Directive in Its EU Environmental Law Context: European Nature's Best Hope? (London: Routledge 2015) 265-284.

Again, area based management tools in the form of the designation of special areas of conservation and protected areas are the principal means to ensure the maintenance and restoration of natural habitats and species at favourable conservation status as part of a coherent trans-European ecological network, referred to as Natura 2000, which are examined in greater detail below.[214]

8-14 The Birds Directive and the Habitats Directive have been in place for several decades and it is disappointing to note that efforts are still focused on putting the protection scheme in place in the marine environment. The Court of Justice European Union has yet to explore in any great detail the failure of Member States to discharge their obligations to establish conservation measures and management plans under the Habitats Directive.[215] The bulk of the case-law relates to the obligation placed on Member States to avoid deterioration of habitats and species, as well as the requirement of undertaking an assessment of the implication of plans or projects on site's conservation objectives.[216] One important exception is a case concerning the failure of Spain to adopt and apply an appropriate conservation and protection system to prevent the deterioration and disruption of habitats and species in the Macaronesian biogeographical region.[217] As soon as the designation process of the trans-European ecological network is complete, there will undoubtedly be further enforcement proceedings concerning the failure of Member States to take appropriate restorative action under the Habitats Directive and further judicial clarification as to what the substantive obligation to restore amounts to in practice.[218]

8-15 In the interim, the jurisprudence in relation to the failure of Ireland to implement the Birds Directive correctly may be relevant, by analogy, in so far that the Court held that the scheme of protection "may not be limited to avoiding harmful human effects but must also include positive measures to

[214] See para. 8.h.i.
[215] Article 6(1), Council 92/43/EEC.
[216] Articles 6(2)-(4), Council 92/43/EEC [2011] ECR I-00134.
[217] Case C-90/10, *Commission -v- Spain* The Court held that Spain had failed under Articles 4(4), 6(1) and (2),
[218] Article 4(4) and Article 6(1) of the

preserve or improve the state of the area, as the case may be."[219] In other words, setting conservation and maintenance objectives must entail affirmative action and not amount simply the adoption of preventative or maintenance conservation measures. The Birds Directive was thus interpreted in a manner that may well be followed by the Court subsequently by the Court in relation to similar provisions in the Habitats Directive.[220] In a previous case concerning enforcement proceedings against the United Kingdom, it is also pertinent to note that the Court held that it "may be necessary to adopt both measures intended to avoid external man-caused impairment and disturbance and measures to prevent natural developments that may cause the conservation status of species and habitats in special areas of conservation to deteriorate.[221]

8-16 In contrast to the general duty of restoration that arises under the Habitats and Birds Directives, the Court's jurisprudence on the strict scheme of protection that applies to over 90 animal and plant species including marine species such as cetaceans and sea turtles clarifies the nature and extent of the obligation to take proactive measures.[222] For instance, the Court has held that Member States must implement concrete and specific protection measures,[223] adopt coherent and coordinated measures of a preventive nature,[224] as well as ensure the effective avoidance of deterioration or destruction of breeding sites or resting places.[225] The Court has held that a Member State does not uphold its obligations under the Directive for strict

[219] Case C-418/04 Commission v Ireland, [200] ECR I – 11053, para 154. . Significantly, the separate non-binding opinion of the AG that there is "no unconditional rules on when positive measures are to be taken, for example when management plans are to be drawn up. They form only part of the conservation measures to be defined. Whether and to what extent positive measures are to be taken can be determined only on the basis of the specific state of the area concerned, that is to say, the measures must be appropriate and accordingly variable".
[220] Article 4 of the Birds Directive and 6(1) of the Habitats Directive
[221] Case C□6/04 Commission v United Kingdom (Conformity) [2005] ECR I□9017, paragraph 34.
[222] Article 12(1)(d), Council 92/43/EEC requires Member States to take the requisite measures to establish a system of strict protection for the animal species listed in Annex IV(a).
[223] Case C-183/05 *Commission* v *Ireland* [2007] ECR I-137, paragraph 29.
[224] Case C-518/04 *Commission* v *Greece*, paragraph 16, and *Commission* v *Ireland*, paragraph 30.
[225] of the animal species listed in Annex IV(a) to the Habitats Directive (see, to that effect, Case C-103/00 *Commission* v *Greece* [2002] ECR I-1147, paragraph 39).

protection of certain species, if it fails to establish a programme of measures to arrest the threatened extinction of endangered species or implements a conservation plan that is inadequate to ensure recovery.[226] Accordingly, restoration actions in such instances will need to go beyond the setting of conservation and maintenance objectives in the form of spatial management and planning restrictions.

f. Remediating marine ecological damage under EU law

8-17 What obligations arise under EU law if marine ecosystems and habitats are damaged contrary to the regulatory code? As noted previously, EU law draws a distinction between restoration and remediation as normative and juridical constructs. In the context of terrestrial projects, the Court of Justice European Union has clarified the obligations to remediate and to adopt environmental compensatory measures, particularly if a Member State allows damage to occur to a special area of conservation by not following the prescribed assessment requirements.[227] The Court has held that it is incumbent upon Member Sates to take assessment and management measures equivalent to those required of a compliant project. From this, it can be deduced that some form of site remediation may be necessary including the demolition of the works already completed if there isn't strict adherence to statutory and environmental consent procedures under EU law. Moreover, the economic cost of such measures may not be a determining factor in the choice of alternative solutions. Furthermore, if a development is approved on the grounds of imperative reasons of overriding public, social and economic interest, the anticipated damage to the site must be precisely identified, so that Member State can take all compensatory measures that are necessary to

[226] Case C-383/09 *Commission v France* [2011] ECR I-4869. H Schoukens and K Bastmeijer 'Species Protection in the European Union: How Strict is Strict? in C. Born, A. Cliquet, H. Schoukens, D. Misonne, G.Van Hoorick (eds), The Habitats Directive in Its EU Environmental Law Context: European Nature's Best Hope? (London: Routledge, 2015) 135-136.
[227] Article 6(3) and (4) of the Habitats Directive

ensure that the overall coherence of the ecological network making-up the Nature 200 network of protected areas. [228]

8-18 The duty to remediate is also evident in case law concerning the Birds Directive, which may be relevant to marine ecological remediation in instances of environmental damage. In a case concerning the failure to take the necessary measures to prevent a blanket bog from being damaged by overgrazing and thus curtailing the possibility of maintaining and increasing the populations of protected bird species, the Court noted that the Irish Government itself recognised in its rejoinder that it must not only take measures to stabilise the environmental problem of overgrazing, but that it must also ensure that the damaged habitats were allowed to recover. In other words, the follow-up action *de facto* required restoration in the form of a reduction in grazing pressure sufficient to allow the damaged habitats and biotopes to re-establish in line with the requirements of EU nature conservation instruments

g. Making the polluter pay for ecological damage

8-19 Remediating damage to marine biodiversity from the effects of offshore activities may be cost prohibitive and not entirely possible. The EU environmental liability regime is thus focused on the twin objective of prevention and deterrence on the basis that the polluter should pay for environmental damage and the cost of remediation measures. For this purpose, the Environmental Liability Directive, 2004/35/EC adopts a bifurcated approach by establishing in the first instance a strict financial liability regime for operators carrying out dangerous activities set out in Annex III whose activity causes damage or the imminent threat of damage. [229] Secondly, it provides a fault based liability regime applicable to the damage of protected species and natural habitats caused by activities outside those

[228] Solvay and Others, C□182/10, EU:C:2012:82, paragraph 74).

[229] Article 3(1)(a), Directive 2004/35/EC. Annex III sets out the activities

prescribed list in Annex III. The remit of the instrument extends to marine environmental damage, particularly when damage significantly adversely affects the ecological and environmental status of the marine environment under the water and marine directives, as well as the favourable conservation status of species and habitats protected by EU nature conservation law described above.[230]

8-20 The Environmental Liability Directive is not suitable for use as a general instrument for the restoration of the marine environment because it is case specific and result specific in so far as it requires the identification of the polluter(s), the damage must be quantifiable and the polluter(s) need to have caused the damage in question.[231] On the other hand, the primary aim of remediation measures adopted to meet the requirements of the Directive is to restore the damaged natural resources and ecological services back to a baseline condition of habitats and species by reference to their "conservation status at the time of the damage, the services provided by the amenities they produce and their capacity for natural regeneration".[232] In this context, there is a nexus with the duty to restore as remediation measures are defined under the Directive as "any action, or combination of actions, including mitigating or interim measures to restore, rehabilitate or replace damaged natural resources and/or impaired services, or to provide an equivalent alternative to those resources or services".[233]

8-21 Although the focus is on remediation in the sense of taking measures to make up for recent habitat damage for which there is a specific liability, the EU's Liability Directive nonetheless has four important prevention and deterrence ramifications that apply to activities undertaken in the marine environment, which cause or have the potential to cause ecological damage.

[230] Article 3(1)(b), Directive 2004/35/EC.
[231] Case C-378/08, *Raffinerie Mediterranee*, 9 March 2010, [2010] ECR I-0000, paras. 56-58. Likewise, the liability scheme is aimed at ecological damage and does not apply to personal injury or to damage to private property or to any economic loss.
[232] Annex II, Directive 2004/35/EC. Article 2(8) defines "remedial measures as any action, or combination of actions, including mitigating or interim measures to restore, rehabilitate or replace damaged natural resources and/or impaired services, or to provide an equivalent alternative to those resources or services'
[233] *Ibid.*

First, the Directive is designed to complement international measures including the IMO civil liability and compensation regime that applies to pollution from shipping.[234] Secondly, the Directive was amended to bring within its scope the geological storage of carbon dioxide as a so-called "bridging technology" that contributes to mitigating climate change including storage in the seabed of Member States' exclusive economic zones and on their continental shelves.[235] Thirdly, it applies under EU measures adopted in response to the Deepwater Horizon disaster in the Gulf of Mexico aimed at improving the safety of offshore hydrocarbon operations and limiting the consequences of marine pollution, along with improving the long-term resilience of offshore installations in light of the effects of climate change. Vitally, hydrocarbon licensees are financially liable for the prevention and remediation of environmental damage as defined in the Environmental Liability Directive.[236] Lastly, from a governance perspective, the Directive broadens the numbers of actors involved in so far as it allows for public participation and access to justice for people affected and NGOs in environmental liability and remediation actions.

g. Area based management tools

8-22 There are several forms of area based management tools including marine protected area (MPA) applicable in Europe's regional seas for

[234] Article 4(2) and Annex II, Directive 2004/35/EC. the International Convention of 27 November 1992 on Civil Liability for Oil Pollution Damage;
(b) the International Convention of 27 November 1992 on the Establishment of an International Fund for Compensation for Oil Pollution Damage;
(c) the International Convention of 23 March 2001 on Civil Liability for Bunker Oil Pollution Damage;
(d) the International Convention of 3 May 1996 on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea;
(e) the Convention of 10 October 1989 on Civil Liability for Damage Caused during Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels.
[235] Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006, OJ L 140, 5.6.2009, p. 114–135.
[236] Article 7, Directive 2013/30/EU of the European Parliament and of the Council of 12 June 2013 on safety of offshore oil and gas operations and amending Directive 2004/35/EC, OJ L 178, 28.6.2013, p. 66–106

conservation and restoration purposes under international and EU law.[237] In light of their importance to the overall objective of ocean recovery, consideration is given below to the establishment of networks MPAs, the use of biologically sensitive protected areas under the common fisheries policy, as well as contemporary developments on maritime spatial planning.

8.g i. Marine protected areas

8-23 The importance of MPAs as a regulatory tool for implementing restoration objectives should not be underestimated, as Europe strives to achieve several globally agreed targets on the degree of spatial designation of the marine environment for conservation purposes. The SDGs, for instance, requires the conservation of at least 10 percent of coastal and marine areas by 2020.[238] As seen previously, a similar objective is set down by the Aichi Biodiversity targets.[239]

8-24 Efforts have been underway for close to two decades to establish coherent networks of MPAs in Europe's regional seas.[240] At the time of writing, the Natura 2000 network consisted of 936 marine SPAs and 1848 marine sites of community importance at a pan European level.[241] Despite this progress, the failure to ensure adequate MPA geographical coverage in European regional seas is a matter of concern for the European

[237] Y. Tanaka, *The International Law of the Sea*, 2nd ed., (Cambridge: Cambridge University Press, 2015) 346-356. The European Commission have used an expansive definition of which provides: "an MPA is a geographically defined area, "whose primary and clearly stated objective is nature conservation, and which are regulated and managed through legal or other effective means to achieve this objective. European Commission, report on the progress in establishing marine protected areas (as required by Article 21 of the Marine Strategy Framework Directive 2008/56/EC (Brussels: EU, 2015).
[238] Target 14.5, SDGs.
[239] Target 11, Aichi Biodiversity Targets.
[240] European Commission, report on the progress in establishing marine protected areas (as required by Article 21 of the Marine Strategy Framework Directive 2008/56/EC (Brussels: EU, 2015).
[241] http://ec.europa.eu/environment/nature/natura2000/barometer/docs/SCI_EU27.pdf.

Environmental Agency who have pointed out that it may well undermine conservation and restoration efforts in the longer-term.[242]

8-25 Given the urgency of the task of restoring the environmental health of Europe's regional seas, getting MPA operational can sometimes be in the order of decades. [243] The designation and management process is particularly protracted under EU nature conservation law with habitats and species selected for conservation on the basis of scientific merit. There is little scope for taking economic considerations into account under the Habitats Directive, which will often make it difficult to achieve an appropriate balance between environmental and blue growth objectives.[244] Further weaknesses have been noted with OSPAR pointing out that there is a major scientific information deficit concerning the "occurrence, distribution and status of species and habitats as well as the lack of management plans and measures", and accordingly it was not possible for the OSPAR Commission to form an opinion or to reach a definitive conclusion as to whether the MPAs are "well-managed" or indeed ecologically coherent.[245]

8-26 The strength of MPAs as a management and regulatory tool is their versatility in maintaining and restoring species, habitats, ecosystem resilience, as well as building natural capital. In the words of the European

[242] In 2015, for instance, the European Environment Agency estimated that only 4% of EU marine waters had been designated as part of the Nature 2000 network, with additional national sites bringing the total area protected to 5.9 per cent of EU waters. The latter figure is just over half-ways towards achieving the aforementioned ambitious CBD Aichi Biodiversity Target 11.1 of 10 per cent MPA coverage by 2020. Spatial coverage of MPAs under the Regional Seas Conventions varies considerably from 12.7 per cent in the Baltic Sea and 9.7 per cent in the Mediterranean Sea to considerably less in Atlantic, with about 6 per cent of coverage in the OSPAR Maritime Area. European Commission, report on the progress in establishing marine protected areas (as required by Article 21 of the Marine Strategy Framework Directive 2008/56/EC (Brussels: EU, 2015). Also, see, European Environment Agency, *Marine protected areas in Europe's seas: An overview and perspectives for the future* (Luxembourg: EEA, 2015); European Environment Agency, *Marine protected areas in Europe's seas: An overview and perspectives for the future* (Luxembourg: EEA, 2015); 2014 *Status Report on the OSPAR Network of Marine Protected Areas* (London: OSPAR, 2015).
[243] See E. Olsen *et al*., *Achieving Ecologically Coherent MPA Networks in Europe: Science Needs and Priorities* (Ostend, European Marine Board, 2013).
[244]Case C-44/95 *R v. Secretary of State for the Environment ex parte RSPB*, [1996] ECR 1-3805; Case 166/97 *Commission v France* [1999] ECR I-1719 and Case C-96/98 *Commission v France* [1999] ECR I-8531.
[245] *Ibid.* at 41. Also see, An assessment of the ecological coherence of the OSPAR Network of Marine Protected Areas in 2012 (London, OSPAR 619/2013, 2013)

Environmental Agency, they have the potential to deliver a biodiversity 'vault' with a view to restoring ecosystem structure and functions in degraded parts of the marine environment.[246] In achieving legally-binding targets specific to restoration, the success of the MPA network in Europe's regional seas is however very much dependent on the effectiveness of operational management and assessment programmes, as well as enforcement and compliance measures, which all must be capable of ensuring adaptive responses to anthropogenic impacts including the effects of climate change. The European Commission have pointed out that MPA networks can strengthen the delivery of marine ecosystem services that are germane in combatting climate change and that have a significant economic value through the assimilation of waste and nutrients, along with providing coastal protection against flooding and the effects of extreme weather events.[247]

8-27 In summary, achieving ecological restoration of degraded sites designated under EU nature conservation law is very much a work in progress, but has considerable potential in delivering ocean recovery objectives.[248] Instructively, both the European Commission and the EEA have persistently called for more effective action and the adoption of MPA management measures to restore Europe's degraded marine environment.[249] In particular, the EEA has noted that commercially exploited fish are "almost absent from nature conservation efforts" in the areas that are designated for protection as part of the Natura 2000 network.[250] There is some evidence of progress in the latter regard with NEAFC and the EU adopting fisheries management measures to close specific areas in the Wider Atlantic Region to bottom fisheries with a view to protecting vulnerable marine ecosystems.[251] The EU adopted a regulation that prohibits the use of bottom trawls below the 800

[246] European Environmental Agency Report No 3/2015, Marine protected areas in Europe's seas, at 9.
[247] European Commission, report on the progress in establishing marine protected areas (as required by Article 21 of the Marine Strategy Framework Directive 2008/56/EC (Brussels: EU, 2015) at 2, citing Potts at al. (2014) 'Do marine protected areas deliver flows of ecosystem services to support human welfare?', *Marine Policy* 44
[248] *Ibid.*
[249] *Ibid*., at 29.
[250] *Ibid.* at 31.
[251] Council Regulation (EC) No 2347/2002 establishing specific access requirements and associated conditions applicable to fishing for deep-sea stocks, OJ L 351/6, 28.12.2002.

meter depth limit along with other special protection measures for vulnerable marine ecosystems in EU waters, the NEAFC Convention Area, as well as the area of the Fishery Committee for the Eastern Central Atlantic.[252]

8.g.ii Restoration and biologically sensitive protected areas

8-28 Other positive developments that have bearing on the ecological health of the ocean include the establishment of biologically sensitive protected areas for fisheries management purposes and to protect marine ecosystems under the common fisheries policy.[253] This spatial management approach applies to areas "where there is clear evidence of heavy concentration of fish below minimum conservation size and spawning grounds, in which fishing activities may be restricted or prohibited in order to contribute to the conservation of living aquatic resources and marine ecosystems."[254] Multi-annual plans are used to manage major fisheries in the EU and many feature closed areas and closed seasons for certain fisheries. In 2016 the Commission proposed a plan for demersal fisheries in the North Sea and additional plans are under active consideration for Western Waters in the Atlantic and the Western Mediterranean.[255] These areas are of course established primarily for the purpose of fishery management and not exclusively for the protection or restoration of marine biodiversity.

8-29 Greater efforts should be made to link fisheries conservation measures with ecological objectives under the Habitats and Birds Directives. The EU and the Member States ought to press ahead with further designations as the success of MPAs in restoring fish stocks is becoming increasingly apparent, as evident from an expert report prepared for the European Commission and published in 2016, which highlights that the imposition of "restrictions on certain fishing gear within MPAs, accompanied by different zoning schemes,

[252] Regulation (EU) 2016 of 14 December 2016 establishing specific conditions for fishing for deep-sea stocks in the north-east Atlantic and provisions for fishing in international waters of the north-east Atlantic and repealing Council Regulation (EC) No 2347/2002, OJ L 354/1, 23.12.2016.
[253] Article 8, Regulation (EU) No 1380/2013.
[254] *Ibid.*
[255] European Commission, COM(2016) 493, 2016/0238.

could help to reconcile socioeconomic and conservation objectives with MPAs".[256]

8-30 In summary, there appears to be considerable scope for further regulatory and management action in the EU and by the Member States to restore fragile marine ecosystems by the application of spatial planning tools. At an international level, the economic case supporting MPAs is a compelling one in so far as the OECD estimates that increasing the spatial coverage of protected areas in the marine environment up to 30 percent at a global level could generate up to $920 billion to the world economy between 2015 and 2050.[257]

8.g.iii Maritime spatial planning and impact assessment

8-31 The shift away from the setting of conservation and maintenance objectives solely, towards a proactive approach in marine environmental management can be seen in the EU's Marine Spatial Planning Directive, which establishes an integrated trans-boundary planning process for maritime activities in all waters under the sovereignty and jurisdiction of the Member States.[258] The spatial management plans adopted by the Member States to fulfil the requirements of the Directive must aim to preserve, protect and improve the environment including resilience to climate change.[259]

8-32 With an emphasis on environmental improvement, the Directive has the potential to play a central role in the implementation of the EU's marine ecological restoration agenda in so far as spatial planning measures can be applied by Member States to arrest the loss of biodiversity and the degradation of ecosystem services, as well as a mechanism to deliver climate change mitigation and adaptation measures in the European marine

[256] D. Russi *et al*., *Socio-Economic Benefits of the EU Marine Protected Areas*, Report prepared by the Institute for European Environmental Policy (IEEP) for DG Environment (Brussels: IEEP, 2016) at 2.
[257] OECD, *The Ocean Economy in 2030* (Paris, OECD, 2016).
[258] Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning, OJ L 257/135, 28.8.2014.
[259] Article 5(2), Directive 2014/89/EU.

environment.[260] Significantly, the Member States are responsible for designing and implementing spatial plans under the Directive, as well as cooperating with third countries by means of the regional seas agreements and other international forums.[261] In adopting plans for this purpose, Member States must take into account the precautionary and preventative principles, along with adaptive and ecosystem-based management approaches.[262] Improving the capacity of Member States and the EU to undertake adaptive management is a central strand running through the EU's Strategy on Adaptation to Climate Change and in making Europe more resilient to the effects of climate change.[263] In this context, the Directive acknowledges the complexity of marine environment and ecological systems and provides a solid legal plinth for cross-border collaboration between the relevant authorities in the Member States, third countries, along with public and private bodies to ensure among other matters planning considerations that take into account long-term changes due to climate change.

8-33 The implementation of the MSP Directive will not be achieved until 2021. Rolling out a blueprint for Europe's regional seas is not plain sailing in so far as it will take a concerted effort by the Member States, the regional seas bodies, third countries as well as other stakeholders, to ensure that economic, social and ecological objectives are fully integrated to maritime planning and decision-making. One study opines that there is a need to make scientific information spatially explicit to facilitate the mapping of cumulative impacts of human activities on ecological processes and marine ecosystems.[264] In order to close the knowledge deficit and to improve governance and management arrangements for cross-boundary implementation of the Directive, there are several cross-border projects underway in the Gulf of Bothnia, the Baltic Sea, the Adriatic Sea, the Mediterranean Sea and the Atlantic.

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[260] Recital 13, Preamble, Directive 2014/89/EU.
[261] Articles 4 and 12, Directive 2014/89/EU.
[262] Recital 14, Preamble, Directive 2014/89/EU.
[263] European Commission, Climate change adaptation, coastal and marine issues, SWD(2013) 133 final, 16.4.2013.
[264] European Commission, MSP Data Study: Evaluation of data and knowledge gaps to implement MSP, (Brussels; European Commission, 2016) at 34.

8-34 The spatial management plans ultimately adopted by the Member States can have specific restoration measures that are aimed at improving the integrity and functioning of ecosystems in Europe's regional seas in line with the biodiversity targets set down by the MSFD and the other EU conservation instruments examined above. In this context, where spatial planning is included in marine strategies and management measures to attain good environmental status under the Marine Strategy Framework Directive, it can be applied to ensure that human activities in the marine environment are managed in a manner that respects the carrying-capacity of ecosystems including any restoration objectives to improve resilience and the delivery of ecological services.[265] In this context, it is notable that public consultation and engagement figures highly in the scheme underpinning the Directive including specific reference to EU regulatory provisions that implement the Aarhus Convention on access to justice in environmental matters. [266]

8.g. iv Restoration and environmental assessment tools

8-35 Restoration action at project and regional seas scales will impinge upon the wider marine environment and may therefore require screening and evaluation. In the EU and the Member States, the EIA Directive and the SEA Directive provide regulatory requirements for assessing environmental impacts and are applicable in the marine environment to restoration activities under certain circumstances.[267] The assessment of the environmental impacts facilitates informed and transparent decision-making about the protection of the environment, along with the management and restoration of ecosystems and natural capital.

[265] HELCOM, Guideline for the implementation of ecosystem-based approach in Maritime Spatial Planning in the Baltic Sea area
[266] Recital 22, Directive 2014/89/EU. Also see Article 9, Directive 2014/89/EU.
[267] Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, L26/1, 28.1.2012; Directive 2001/42/EE of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, OJ L 197/30, 21.7.2001

8-36 Several brief points can be made about restoration and environmental assessment tools in the context of ocean recovery. First, if applied correctly, EIA and SEA have the potential to improve decision-making in relation to the design and implementation of restoration projects, plans and programmes. Secondly, in relation to the application of spatial management tools for restoration purposes such as those outlined above, there is a requirement to undertake impact assessment on sites, habitats and species protected under the Habitats and Birds Directives, [268] including candidate sites. [269] Third, if the Member States decide to adopt a large-scale restoration plan or programme for Europe's regional seas, public consultation under the SEA Directive will improve transparency and legitimacy.[270] Fourth, at a practical level, the results of the MERCES project can be applied in improving the design and implementation of impact assessment tools for restoration projects and programmes. Indeed, there are a number of EU funded projects including the LIFE SEPOSSO project evaluating EIA tools in relation to the restoration of seagrass meadows that have been destroyed by marine infrastructure in Italy.[271]

[268] Case C-226/08 *Stadt Papenburg* [2010] ECR I-131.
[269] Case C-127/02, *Landelijke Vereniging tot Behoud van de Waddenzee and Others* [2004] EGR 1-7405.
[270] Joined Cases C-105/09 and C-110/09, *Terre Wallonne ASBL* [2010] ECR I-05611.
[271] See: http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=6281

9. **Mainstreaming ecological restoration at UN negotiations**

9-01 The EU and the Member States are pushing for the inclusion of ecological restoration into the text of the draft recommendation of the preparatory committee established by United Nations General Assembly under Resolution 69/292 and tasked with the development of an international legally binding instrument under the LOS Convention on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. A preparatory committee was established by the United General Assembly to prepare the ground for the convening of an intergovernmental conference on this subject. The committee was attended by states parties to the LOS Convention, non-parties, inter-governmental organisations, specialised agencies and related organisations, UN Funds and programmes, bodies and offices, as well as strong representation from non-governmental organisations representing the interests of civil society.[272]

9-02 Prevention of biodiversity loss and marine ecosystem damage was discussed at all four sessions of the preparatory committee negotiations in 2016-2017. The EU delegation has long since advocated for the adoption of a new implementing agreement under the LOS Convention and is a key player at the negotiations. The agreement has the potential to strengthen international and regional ocean governance and to ensure greater coherence in the international legal order as it applies to the ocean, in line with the objectives of the 2030 Sustainable Development Agenda. At the various sessions of preparatory committee, the EU delegation raised the issue of protecting, maintaining and restoring the health of the ocean and ecosystem resilience in various segments of the negotiations dealing with area based management. There was also some discussion of restoration in the broader context of establishing a rehabilitation fund and a liability contingency fund for

[272] R. Long. M. Rodríguez Chaves, "Anatomy of a new international instrument for biodiversity beyond national jurisdiction: First impressions of the preparatory process" [2015] 6 *Environment Liability: Law, Policy and Practice*, 214-229.

the purpose of providing compensation for restoration activities and to redress damages caused by disasters.

9-03 Apart from the guidance and imperatives that may be derived from the duty to restore under the EU legal order reviewed above, the rationale for including specific provisions on restoration in the new agreement is primed by the understanding that conservation and sustainable use measures alone are no longer sufficient to ensure healthy marine ecosystems. Many deep ocean ecosystems are vulnerable to human pressures including the effects of climate change. As is evident from the review of the experience in Europe's regional seas, contemporary conservation and management tools are not fit for purpose and will be difficult to apply to meet the challenges ahead in implementing the holistic concept of ocean recovery. Moreover, scientific experience is growing in the EU in light of the initial results of scientific research projects such as MERCES. There is also some support in the scientific literature that the principles and attributes of ecological restoration, formulated originally for terrestrial ecosystems, can be applied to marine habitats.[273]

9-04 Accordingly, the new agreement can provide a legal plinth for the application and utilisation of ecological restoration to deep sea ecosystems, even in the limited form of removing anthropogenic stressors so as to facilitate natural recovery processes. Clearly, the EU position at the UN negotiations is shaped by the belief that international law must be applied to ensure ocean recovery in response to *inter alia*: the results of First Global Marine Integrated Assessment and the 4th Biodiversity Outlook; Targets 14.1 ,14.2 and 14.4 of the SDGs; Aichi Biodiversity Targets under the CBD; and in order to mitigate and adapt to the effects of climate change under the UNFCCC and the Paris Agreement. In this context, restoration is not a substitute for conservation, nor is it a conduit for allowing intentional destruction or unsustainable use of biodiversity.

[273] K. Mengerink *et al* 2014 *Science* 344:696

9-05 With an eye to the future, the negotiation of a new instrument and the codification of the duty to restore as both a normative principle and as a general legal obligation under a new biodiversity treaty represents an opportunity for a legal, ethical, ecological and economic paradigm shift in international biodiversity law that will enhance State and corporate social responsibility in line with ITLOS Advisory Opinions in Area and the SRFC cases. This in turn will provide an opportunity to link ecological restoration to regulatory/governance arrangements applicable to fisheries, mining and seabed cables, as well as specific tools ABMTs, EIA/SEA and capacity building / technology transfer, along with the liability regime under the new instrument.

10. Road ahead

10-01 The EU is an important international actor in both the climate change and BBNJ negotiations and is firmly committed to the furtherance of a stable public order for the ocean based upon the rule of law. The European Commission is acutely aware that the Paris Agreement requires successful implementation and that the international community must become far more proactive in arresting and averting the catastrophic loss of biodiversity in marine areas both within and beyond national jurisdiction.[274]

10-02 In a broader regulatory and policy context, the launch of the MERCES project demonstrates that the struggle to understand the scientific, policy and regulatory challenges in revitalizing natural capital in Europe's regional seas has only begun and major efforts will be required over the coming decades including the application of green infrastructure and a blue circular economy in national planning frameworks.[275] In the interim, the results of the MERCES project will grow our knowledge of marine ecological restoration as a relatively young scientific discipline and help close the many gaps in its application as a regulatory and policy tool in achieving sustainability and climate change objectives in line with EU treaty objectives, as well as under customary and treaty law.

10-03 Project-based results in themselves will not save marine biodiversity or strengthen ecosystem resilience to the effects of climate change. The report argues that there is pressing need for an inspirational vision for the future ocean based upon the concept of recovery. The findings of the law and policy review suggest, on the one hand, that the principal regulatory tools are already in hand and it is particularly heartening to note that the duty to restore is very much mainstreamed in many international and EU legislative instruments. On the other hand, although all of the instruments are science based and iterative in ambit, it is disappointing to see that little substantive

[274] European Commission, Our life insurance, our natural capital: an EU biodiversity strategy to 2020, COM(2011) 244, 3.5.2011.
[275] COM(2015) 478, 2.10.2015, at 8.

progress has been achieved within the first cycle of implementation in returning degraded marine ecosystem to a favourable conservation status. Beyond the confines of project work and some success under the common fisheries policy, the EUs marine restoration agenda appears to remain in its infancy.

10-04 Nonetheless, some important regulatory lessons are now self-evident. For instance, the possibility of restoration should not be used as a justification for undertaking economic activities that damage ecosystems in so far as it is considerably more economical to conserve terrestrial and marine ecosystems than to repair, rehabilitate or restore a degraded environment. [276] Furthermore, restorative measures cannot be viewed in isolation but should be considered as part of the broader panoply of legislative measures aimed at the avoidance and mitigation of environmental damage including the effects of climate change [277] Conveniently, the targets set down by the SDGs, the Paris Agreement and the Marine Strategy Framework Directive, will act as important yardsticks against which progress on the restoration of natural capital can be measured. The evidence presented in the scientific literature is compelling and regulators and policy-makers must keep in mind that some marine ecosystems will take decades if not hundreds of years to recover.[278] The is very much the case in relation to marine ecosystems in areas beyond national jurisdiction, where environmental health and recovery are very much contingent upon the slow pace of ecological processes in the deep ocean.[279]

[276] Importantly as noted by the Conference of Parties to the Convention on Biological Diversity, ecosystem restoration is not a substitute for conservation, nor is it a conduit for allowing intentional destruction or unsustainable use, COP 11 Decision XI/16. For a useful analogy regard the costs associated with the restoration of mangroves, see, *inter alia*: M. Webber, M., Webber, D. and Trench, C. (2014). Agroecology for sustainable coastal ecosystems: A case for mangrove forest restoration, in: Benkeblia, N. (Ed) *Agroecology, Ecosystems and Sustainability*. CRC Press, Taylor and Francis group, Boca Raton; Gilman, E.L., Ellison, J., Duke, N.C., and Field, C. (2008). Threats to mangroves from climate change and adaptation options: a review. *Aquatic Botany*, 89: 237–250; Ramsar Secretariat (2001). *Wetland Values and Functions: Climate Change Mitigation*. Gland, Switzerland.
[277] European Environmental Agency, The European environment: State and outlook 2015: synthesis report (Luxembourg: European Union, 2015) at 159.
[278] SER and IUCN Commission on Ecosystem Management, Ecological Restoration, a means of conserving biodiversity and conserving livelihoods (Gland: SER, 2014) at 6.
[279] United Nations, Technical Abstract of the First Global Integrated Marine Assessment on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (New York: United Nations, 2016) at 1.

For this reason, the EU delegation at the UN negotiations is fully justified in pressing to codify the objective of ecological restoration in the new BBNJ instrument.

10-5 From the law and policy review undertaken above, it is evident that the duty to restore arises across the full spectrum of approaches to marine environmental regulation and governance and in a variety of different contexts. As such, the science and practice of marine ecological restoration can be applied as fundamental tools in addressing the deplorable status of marine biodiversity. Looking ahead, it is also plain to see that the journey towards sustainable development and improving the health of the ocean will be a long and arduous one. Nonetheless, the voyage has begun and the EU's normative compass has been firmly set towards the goal of marine ecosystem restoration in changing European seas.