



Ocean-based Negative Emission Technologies



Deliverable Title	D2.7: Report on attribution of private conduct to States in relation to ocean-based NETS under the international law of the sea
Lead	University Hamburg
Related Work Package	2
Related Task	2.3
Author(s)	Alexander Proelß, Robert Steenkamp
Prieto Dissemination Level	Public
Due Submission Date	30.11.21
Actual Submission	01.12.21
Project Number	869357
Start Date of Project	01. July 2020
Duration	60 months



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement number 869357.



Deliverable 2.7: Report on attribution of private conduct to States in relation to ocean-based NETS under the international law of the sea

I. Introduction

Non-State actors continue to gain influence in areas of common concern to the international community. The influence of such actors can be seen in the ongoing role of private security companies in the suppression of piracy, the work of non-governmental organisations in search and rescue operations at sea, and the active participation of private companies in the exploitation of ocean resources.¹ In the context of climate change, the design of the Paris Agreement² involves an unprecedented participation of non-State actors, with the Global Action Portal currently recording 26 318 actors engaged in climate actions, including 9 983 companies, 1 441 investors, and 3 221 organisations.³ Within the climate change regime, efforts aimed at reducing greenhouse gases will depend on States actively working with a broad range of non-State actors – encapsulating the so-called “all hands on deck” concept with which climate change efforts have become synonymous.⁴

As the effects of climate change become more apparent and the need for action becomes more urgent, governments, policymakers and numerous other groups of actors have begun considering a variety of climate change strategies and technologies. The ocean is characterised by diverse biogeochemical cycles, offers much longer timescales than the atmosphere, and has been described as having great potential for anthropogenic carbon storage.⁵ To this end, increased attention is being paid to ocean-based negative emission technologies (ocean NETs), and there is ongoing research into the effectiveness and associated risks of individual ocean NETs.

The close interaction expected between States and non-State actors in tackling climate change raises questions as to whether ocean NETs undertaken by non-State actors, with the support or authorisation of a State, may be attributed to a particular State. At this junction it should be emphasised that under public international law, States are responsible if an act or omission is (1) attributable to a State, and (2) the act or omission constitutes a breach of an international

¹ C. Liss “Non-state Actors in the Maritime Domain: Non-state Responses to Maritime Security Challenges”. In: L. Otto (ed.) *Global Challenges in Maritime Security, Advanced Sciences and Technologies for Security Applications*, 2020, p. 211.

² Paris Agreement, 12 December 2015, C.N.92.2016. Treaties-XXVII.7.d (entered into force 4.11.2016) (Paris Agreement).

³ <<https://climateaction.unfccc.int/>>, last accessed 27.11.2021.

⁴ J. MacLean, “Reorienting the Role of Non-state Actors in Global Climate Governance”. In: K. Scott, K. Claussen, C. Côté, and A. Kanehara (eds.) *Changing Actors in International Law*, 2021, 234.

⁵ Boyd & Vivian (eds.), *High level review of a wide range of proposed marine geoengineering techniques (GESAMP 2019)*, Rep. Stud. GESAMP No. 98, p. 15.

obligation of the State in question.⁶ For the purposes of the present study, point (1) is of particular importance – i.e., whether the conduct of seemingly private actors could, at times, be characterised as conduct of the State for State sanctioned ocean NETs. This is not to say that a State can be held responsible simply if private acts are attributable to it – this would require both an internationally wrongful act as well as attribution of that act. However, the potential “privatisation” of State functions poses challenging questions for issues of attribution in the context of State responsibility because such privatisation is often “designed to transfer control and thus responsibility away from the State”.⁷ The ultimate aim of the present study, therefore, is to outline the international law framework principally applicable to ocean NETs; to question the role of non-State actors within the context of the law of the sea specifically; and to examine the obligations of States in ensuring that ocean NETs conducted by private actors, under their jurisdiction or control, are regulated in accordance with international law.

In answering these broad questions, the study is divided into four substantive sections. Following a delimitation of the study in section II, section III provides an analysis of the current regulatory regime generally applicable to ocean NETs. For this purpose, section III examines the 1982 United Nations Convention on the Law of the Sea (UNCLOS),⁸ and the 1972 London Convention/1996 Protocol.⁹ The reason for focussing on these instruments is due to the study’s emphasis on *ocean* NETs. Therefore, the international law of the sea framework, and any corresponding international rules and standards associated thereto, are of particular importance. Section IV of the study examines the attribution of private conduct to that of the State within the framework of the International Law Commission’s (ILC) Articles on States Responsibility (ASR). Subsequently, it analyses the role of non-State actors in UNCLOS, including a discussion of the role that such actors play in the exploration and exploitation of the Area – a maritime zone where contractors (as non-State actors) appear to have rights directly attributed under UNCLOS, but which rights are premised on the relationship between such contractors and sponsoring States. Section IV concludes that despite those references in UNCLOS to private actors, such references are either not directly relevant for the purposes of ocean NETs, or any obligations transposed by UNCLOS to private actors are the result of unique arrangements – arrangements that have been consented to by States Parties to UNCLOS. Against this background, section V asks what is required of States under the law of the sea framework when ocean NETs are carried out by non-State actors under their jurisdiction or control. To this end, it analyses the scope of a State’s duty to ensure that non-State actors comply with the rules and principles governing research into and deployment of ocean NETs. Such an analysis necessarily involves an examination of the “due diligence” obligations of States. In doing so, section V acknowledges that there is no uniform standard of due diligence and the primary obligation of a State to act with due diligence, must be attached to specific ocean NETs – whether as experiments or commercial deployment – and specific provisions of UNCLOS.

⁶ ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Yearbook of the ILC 2001-II/2, 54, Art. 2.

⁷ A. Mills, “State Responsibility and Privatisation: Accommodating Private Conduct in a Public Framework”, EJIL: Talk! (August 2021).

⁸ United Nations Convention on the Law of the Sea, 10 December 1982, 1833 UNTS 3 (entered into force 16 November 1994).

⁹ Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 29 December 1972, 1046 UNTS 120 (entered into force 30 August 1975); Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 14 November 1996, ILM 36 (1997), p. 7 (entered into force 24 March 2006).

II. Delimitation of the Study

There is ample literature concerning the attribution of conduct (including that of non-State actors) insofar as it relates to the international responsibility of a State. Equally as voluminous, is literature that deals with the international agreements and institutional arrangements relevant to the governance of negative emission technologies.¹⁰ Therefore, and in order to delimit the present study, a number of caveats need to be borne in mind.

First, ocean NETs aiming at the removal of CO₂ from the atmosphere must be distinguished from activities that are grouped under the heading “Radiation Management” (RM).¹¹ RM techniques aim to manipulate the global climate system by increasing the reflectivity of the earth (an increase in reflectivity reduces the amount of sunlight that reaches the earth’s surface that, in turn, promises a decrease in average global temperatures).¹² In contrast, carbon dioxide removal (CDR) activities, or NETs respectively, refer to interventions in the global carbon cycle in order to reduce the amount of greenhouse gases that have already been emitted into the atmosphere.¹³ Although RM and CDR are both aimed at the intentional intervention in the climate system to address the problems associated with human-induced climate change, this similarity must not be oversimplified. RM and CDR are subdivided into largely dissimilar technologies that require distinct consideration and a “one size fits all approach” to their development, implementation, and international regulation does not exist.¹⁴ It is outside the scope of the present study to provide an examination of the risks and specific regulatory regimes of individual ocean NETs.

Second, ocean NETs are generally not prohibited under international law. However, despite this general legality, individual technologies may prove to be incompatible with the requirements arising from relevant international agreements or customary international law (depending on the specific activity in question). Any examination of the negative (environmental) consequences of a particular ocean NET, therefore, has to account for whether the activity in question itself is legal or illegal. In this context, it must be highlighted that the realisation of “environmental damage” does not necessarily indicate an illegal activity.

Lastly, there is considerable debate on whether the international status of non-State actors (as subjects having international legal personality or not), is commensurate to their global

¹⁰ See P. Boyd and C. Vivian (eds.), *High level review of a wide range of proposed marine geoengineering techniques* (GESAMP 2019), Rep. Stud. GESAMP No. 98; M.V. Florin (ed.), P. Rouse, A.H. Hubert, M. Honegger, J. Reynolds, *International governance issues on climate engineering. Information for policymakers* (2020), Lausanne: EPFL International Risk Governance Center (IRGC); A. Proelss, “Law of the Sea and Geoengineering”. In N. Matz-Lück, Ø. Jensen and E. Johansen (eds.), *Law of the Sea: Normative Context and Interactions with other Legal Regimes* (2021), forthcoming.

¹¹ Intergovernmental Panel on Climate Change, *Climate Change 2014: Synthesis Report, Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (2014), p. 89. The report is available at <https://www.ipcc.ch/site/assets/uploads/2018/05/SYR_AR5_FINAL_full_wcover.pdf>.

¹² Hester, *Liability and Compensation*. In: M. Gerrard and T. Hester (eds.) *Climate Engineering and the Law: Regulation and Liability for Solar Radiation Management and Carbon Dioxide Removal*, 2018, p. 225; Royal Society, *Geoengineering the Climate: Science, Governance and Uncertainty*, 2009, p. 23; see also Secretariat of the Convention on Biological Diversity, *Geoengineering in Relation to the Convention on Biological Diversity: Technical and Regulatory Matters*, Technical Series No. 66 (2012), p. 26.

¹³ *Ibid.* See also W. Rickels et al, *Large-Scale Intentional Interventions into the Climate System? Assessing the Climate Engineering Debate* (2011), pp. 7–8.

¹⁴ M. Florin, “International Legal and Institutional Arrangements Relevant to the Governance of Climate Engineering Technologies”. In Florin (ed.), *International Governance of Climate Engineering. Information for policymakers* (2020), Lausanne: EPFL International Risk Governance Center (IRGC), p. 10.

influence.¹⁵ Needless to say, the present study examines the State-centric law of the sea framework in order to establish such framework's potential to regulate the conduct of non-State actors – without formally engaging in a debate as to their precise international legal personality. The term “non-State actor” encompasses a variety of different actors, including individuals (i.e. natural persons), transnational and private corporations or institutes, non-profit-making environmental groups and associations (NGOs) and international organisations.¹⁶ For the purposes of the present study, the term “non-State actor” is predominately used to refer to private companies and/or research consortia engaged, to varying degrees, in the development and deployment of ocean NETs.

III. The International Legal Framework Applicable to Ocean-based NETs

This study is not the place to undertake a detailed examination of the international legal framework applicable to all ocean-based NETs.¹⁷ Based on existing literature on the matter, the following analysis instead provides an overview of those provisions of UNCLOS, and the London Convention/London Protocol (LC/LP)– including the Protocol's 2013 amendments – that are of particular relevance to ocean NETs. This section assumes that in light of their largely transboundary nature, ocean NETs have to be measured against the requirements of public international law in general and the international law of the sea in particular, but other international legal regimes such as international environmental law remain, as far as their scope is concerned, potentially applicable.¹⁸

Given the direct connection to the ocean, the following overview begins by considering the global framework provided by UNCLOS. As an instrument designed to “promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment”,¹⁹ UNCLOS serves as a comprehensive starting point for any activity that may impact the marine environment. Specifically, UNCLOS follows a zonal approach whereby the regulation of ocean NETs will be determined by where in the ocean the activity in question takes place. Following a discussion of UNCLOS, the remainder of this section examines ocean NETS under the dumping

¹⁵ E. Morgera, *Corporate Accountability in International Environmental Law* (OUP, New York, 2009), p. 57; for a general discussion of private actors in the law of the sea see A. Rocha, *Private Actors as Participants in International Law: A Critical Analysis of Membership under the Law of the Sea* (Bloomsbury Publishing, London, 2021).

¹⁶ P. Sands & J. Peel, *Principles of International Environmental Law* (CUP, Cambridge, 2018), p. 89; C. Antonopoulos, “State Responsibility for Acts of Non-State Actors”. In: P. Pazartzis and P. Merkouris (eds.) *Permutations of Responsibility in International Law*, 2019, p. 11.

¹⁷ Relevant legal assessments include D Bodansky, ‘May We Engineer the Climate?’, *Climatic Change* 33 (1996), pp. 309–321; R Bodle, ‘Geoengineering and International Law: The Search for Common Legal Ground’, *Tulsa Law Review* 46 (2010), pp. 305–322; R Zedalis, ‘Climate Change and the National Academy of Sciences’ Idea of Geoengineering’, *European Energy and Environmental Law Review* 19 (2010), pp. 18–32; R Bodle et al, ‘The Regulatory Framework for Climate-Related Geoengineering Relevant to the Convention on Biological Diversity’ in Secretariat of the Convention on Biological Diversity, *Geoengineering in Relation to the Convention on Biological Diversity: Technical and Regulatory Matters* (2012), pp. 113–142; K Güssow, *Sekundärer maritimer Klimaschutz: Das Beispiel der Ozeandüngung* (2012); A Proelss, ‘Geoengineering and International Law’, *Security and Peace* 30 (2012), pp. 205–211; J Reynolds and F Fleurke, ‘Climate Engineering Research: A Precautionary Response to Climate Change?’, *Carbon & Climate Law Review* 7 (2013), pp. 101–107; J Reynolds, ‘Climate Engineering Field Research: The Favorable Setting of International Environmental Law’, *Washington and Lee Journal of Energy, Climate, and the Environment* 5 (2014), pp. 417–486; H Du, *An International Legal Framework for Geoengineering: Managing the Risks of an Emerging Technology* (2019); N Craik and WCG Burns, ‘Climate Engineering under the Paris Agreement’ *Environmental Law Reporter* 49 (2019), pp. 11113–11129; H Krüger, *Geoengineering und Völkerrecht* (2020).

¹⁸ For analysis see A Proelss, ‘Law of the Sea and Geoengineering’, in N Matz-Lück, Ø Jensen and E Johansen (eds.), *Law of the Sea: Normative Context and Interactions with other Legal Regimes* (2021), in print.

¹⁹ *Ibid.*, preamble.

regime established by the LC/LP, including a discussion of the Protocol's 2013 amendments aimed at regulating ocean iron fertilization and the applicability of this amendment to ocean NETs generally.

A. Ocean-based NETs under UNCLOS

Concerning ocean NETs that take place within the waters under coastal State jurisdiction, States are bound by the provisions concerning the protection and preservation of the marine environment in Part XII UNCLOS as well as the rights and obligations of coastal and other States in the territorial sea (Part II UNCLOS), and the exclusive economic zone (EEZ) (Part V UNCLOS) respectively. Given the framework nature of UNCLOS, there are numerous provisions that find application to ocean NETs, and the purpose of this section is not to provide an exhaustive examination of all relevant provisions. Rather, this section discusses those provisions of relevance to the jurisdiction of coastal States over proposed ocean NETs in either their territorial sea or their EEZ before discussing those provisions of relevance to pollution and marine scientific research (insofar as they relate to ocean NETs). Any activity characterized by the existence of a marine component (including, e.g., marine cloud brightening),²⁰ no matter whether it can be regarded as an ocean NET *sensu stricto* or not, must be measured against the pertinent requirements of the jurisdictional framework codified in UNCLOS.

As far as field experiments carried out with regard to individual ocean NETs are concerned, the argument could be made that these activities fall within the scope of Part XIII UNCLOS on marine scientific research (MSR).²¹ In the absence of an authoritative legal definition contained in UNCLOS, and notwithstanding all controversy surrounding this notion, MSR must, as a minimum requirement, “meet the purpose to increase knowledge on the marine environment”.²² Furthermore, “MSR must be conducted with scientific methods in accordance with the general principle contained in Art. 240(b)”.²³ If these requirements are applied to the present context, while the main purpose of a future deployment of any ocean NETs will be to either remove CO₂ from the atmosphere or reduce overall global temperatures (and thus objectives aimed *not* at increasing knowledge on the marine environment), the situation for field experiments must be assessed differently if and to the extent to which these activities are aimed at assessing whether the intended biochemical processes take place in the marine environment as predicted.²⁴ This would include, e.g., investigations into seawater temperature, density, ingredient of nutrients and water currents at the proposed research sites. Consequently, coastal States are entitled to exercise jurisdiction over ocean NET experiments carried out under their jurisdiction or the jurisdiction of any other State in their respective EEZs on the basis of Article 56(1)(b)(ii) read in

²⁰ The potentially harmful effects of this technique mainly affect the atmosphere, or the ozone layer respectively, and no direct intervention in the marine environment takes place. At the same time, there is a maritime component in that some proposals provide for the deployment of large fleets of unmanned vessels to distribute sea salt aerosols. For an overview see A Proelss, ‘International Legal Challenges Concerning Marine Scientific Research in the Era of Climate Change’, in HN Scheiber, J Kraska and M-S Kwon (eds.), *Science, Technology, and New Challenges to Ocean Law* (2013) p. 280, at 291–294; Du (note 17), pp. 121–123.

²¹ The following sections are taken from Proelss (note 18).

²² N Matz-Lück, ‘Article 238’, in Proelss (ed.), *United Nations Convention on the Law of the Sea – A Commentary* (2017), para. 13; see also AHA Soons, *Marine Scientific Research and the Law of the Sea* (1982), p. 124.

²³ Matz-Lück (note 22), para. 13.

²⁴ See A Proelss and H Chang, ‘Ocean Upwelling and International Law’, *Ocean Development and International Law* 43 (2012), p. 371, at 373.

conjunction with Article 246 UNCLOS.²⁵ As has been demonstrated elsewhere, this conclusion also includes research equipment (e.g. ocean pipes used for artificial upwelling) used in connection with such experiments.²⁶ The limitation of the coastal State's discretion foreseen by Article 246(3) UNCLOS in relation to the granting of permits for MSR conducted by other States or organizations in the EEZ is unlikely to apply with respect to ocean NETs. This is because Article 246(5)(b) UNCLOS renders this limitation inapplicable to the extent that harmful substances are introduced into the marine environment in the course of the MSR project.

Conversely, the sovereign rights and jurisdiction of a coastal State under Article 56 UNCLOS are not applicable when research activities have left the experimental phase and are carried out for either CDR or RM (as the two broad categories of ocean NETs – see section II). The fact that ocean NETs are also not subject to the rights of third States under Article 58(1) UNCLOS arguably results in an application of Article 59 UNCLOS. This provision covers economic uses other than those mentioned in Article 56(1) and Article 58(1) UNCLOS, as well as other non-economic uses of the EEZ. Given that Article 59 UNCLOS constitutes a mere conflict rule instead of assigning sovereign rights or jurisdiction to any of the groups of States concerned, activities covered by its terms are, in the absence of a user conflict, generally to be considered as lawful.

As far as the territorial sea is concerned, it is submitted that the coastal State is, based on Articles 21(1)(b) and (g) UNCLOS, entitled to request foreign ships to avoid certain areas of its territorial sea where ocean NETs are carried out.²⁷ Other States do not have the right to conduct ocean NET experiments in a foreign territorial sea without the coastal State's permission (cf. Article 245 UNCLOS).

B. Ocean-Based NETs under the “Dumping Regime” of the LC/LP

In the context of CDR technologies in particular, most of these technologies involve the introduction of substances into the marine environment. Therefore, it needs to be clarified whether these ocean NETs can be reconciled with the international provisions regulating the dumping of waste and other substances.²⁸ In this respect, Article 210(1) UNCLOS requires that States Parties to UNCLOS “adopt laws and regulations to prevent, reduce and control pollution of the marine environment by dumping”. As far as the minimum level of effectiveness in preventing, reducing and controlling such pollution is concerned, Article 210(6) UNCLOS refers to “the global rules and standards”. It seems to be generally accepted today that this reference clause, or *renvoi*,²⁹ must be understood as a reference to the dumping regime established by the LC and LP.³⁰

²⁵ Coastal States therefore ‘control the extent and nature of any [ocean NETs] research they choose to carry out or authorize’ (KN Scott, ‘Geoengineering and the Marine Environment’, in RG Rayfuse (ed.), *Research Handbook on International Marine Environmental Law* (2015), p. 451, at 462–463).

²⁶ Proelss and Chang (note 25), at 373–375, who submit that due to their small size and the fact that their life span is likely to expire within weeks after deployment, upwelling pipes used for ocean NETs are to be considered as MSR equipment (see Articles 260–262 LOSC) rather than installations or structures in terms of Article 56 (1) (b) (i) in conjunction with Article 60 LOSC; see *ibid.*, at 374, 376.

²⁷ Proelss and Chang (note 25), at 375–376.

²⁸ The following sections are taken from Proelss (note 18).

²⁹ The term ‘renvoi’ was used, *inter alia*, by the Arbitral Court in the *Chagos Marine Protected Area Arbitration (Mauritius v. United Kingdom)*, Award of 18 March 2015, paras. 316 and 503, available at <<https://files.pca-cpa.org/pcadocs/MU-UK%2020150318%20Award.pdf>>.

³⁰ IMO Doc. LEG/MISC/3/Rev.1, 6 January 2003, Implications of the Entry into Force of the United Nations Convention on the Law of the Sea for the International Maritime Organization, 48. The view that the *renvoi* codified in Article 210 (6) LOSC also extends to the LP (which was concluded only after the entry into force of the LOSC) is shared by several parties to the London Convention; see IMO Doc. LC 17/14, 28 October 1994, Report of the Seventeenth Consultative Meeting, para. 2.5. See also F Wacht, ‘Article 210’ in Proelss (note 22), para. 20; L de La

Following publication of a non-binding “Statement of Concern” by the Scientific Groups of the LC and LP in June 2007 and adoption of a “Statement on Ocean Fertilization”³¹ by the States Parties of these agreements, the Meeting of the Parties (MOP) to the LC and LP adopted Resolution LC-LP.1 on the Regulation of Ocean Fertilization.³² This Resolution specifically addressed the compatibility of ocean iron fertilization (OIF) experiments with the requirements of the international law of the sea, in particular whether the activity concerned ought to be considered as “dumping” under the UNCLOS and the LC/LP. The exceptions contained in Article III (1)(b)(ii) LC, Article 1.4.2.2 LP and Article 1(5)(b)(ii) UNCLOS clarify that the placement of substances for purposes *other than mere disposal* must not be regarded as dumping, provided that this placement is not contrary to the objectives of the LC/LP. The decisive question is thus whether OIF experiments, and arguably other ocean NETs involving the introduction of substances into the marine environment, can be held to be in line with the objectives of the LC/LP?

While an isolated reading of the texts of the LC and LP seems to indicate that *any* activity potentially resulting in adverse effects on human health, living resources and/or marine life would be in contradiction with the objectives of the two agreements, Resolution LC-LP.1 on the Regulation of Ocean Fertilization introduced a distinction between “legitimate scientific research” (in line with the objectives of the Convention) and other forms of research (not in line with these objectives).³³ Concerning the question what exactly constitutes “legitimate scientific research”, the Contracting Parties to the LC/LP referred to research “proposals that have been assessed and found acceptable under the assessment framework”³⁴ which, according to the Resolution, was required to be newly developed by the Scientific Groups under the LC/LP.³⁵ They furthermore agreed that until specific guidance through this assessment framework was available, “Contracting Parties should be urged to use utmost caution and the best available guidance to evaluate the scientific research proposals to ensure protection of the marine environment consistent with the Convention and Protocol”.³⁶ While not legally binding *per se*, resolutions such as the one relevant here adopted by the MOP of the LC/LP arguably have to be consulted in the context of interpreting the provisions of the two agreements.³⁷ Thus, based on an interpretation of the LC/LP in light of Resolution LC-LP.1, OIF experiments are excluded from the definition of dumping if and to the extent to which they have to be considered as legitimate scientific research – a requirement that must, again, be assessed on the basis of the framework to be developed by the Scientific Groups of the LC/LP.

Fayette, ‘The London Convention 1972: Preparing for the Future’, *International Journal of Marine and Coastal Law* 13 (1998), p. 516.

³¹ IMO Doc. LC 29/17, 14 December 2007, *Report of the Twenty-ninth Consultative Meeting and the Second Meeting of Contracting Parties*. The Statement was wrongly referred to as ‘Decision’ in Decision IX/16, UNEP/CBD/COP/DEC/IX/16, 9 October 2008, *Biodiversity and Climate Change*, Section C, para. 2.

³² IMO Doc. LC 30/16, Annex 6, Resolution LC-PL.1 (2008), 31 October 2008, *Regulation of Ocean Fertilization*.

³³ On the basis of Resolution LC-PL.1 (2008), activities which are *not* scientific research cannot be held to be in line with the object and purpose of the LC and LP. This approach has been changed with the 2013 amendment (see section 2.3 below).

³⁴ IMO Doc. LC 30/16, Annex 6, Resolution LC-PL.1 (2008), 31 October 2008, *Regulation of Ocean Fertilization*, para. 7.

³⁵ *Ibid.*, para. 4.

³⁶ *Ibid.*, para. 6.

³⁷ See UN Doc A/73/10 (2018), Report of the International Law Commission on the Work of its Seventieth Session, Chapter IV, p. 11, at 85-88 (paras. 12 and 21); see also *Whaling in the Antarctic (Australia v. Japan: New Zealand intervening)*, Judgment, ICJ Reports 2014, p. 226, at para. 46. For detailed analysis see Proelss (note 18).

As far as the content of the assessment framework is concerned, Resolution LC-LP.1 stipulates that “scientific research proposals should be assessed on a case-by-case”³⁸ and that the framework should include “tools for determining whether the proposed activity is contrary to the aims of the Convention and Protocol”.³⁹ The necessary specifications were implemented in 2010 by way of adoption of the “Assessment Framework for Scientific Research Involving Ocean Fertilization”.⁴⁰ Taking into account the wording of this Resolution, according to which the LC/LP MOP “adopted” the framework and “decided” that it should be used by the Contracting Parties to determine whether a proposed OIF experiment constitutes legitimate scientific research,⁴¹ it can be concluded that the Contracting Parties acted on the assumption that application of the framework was legally mandatory for assessing whether an OIF field experiment was to be considered as dumping or not.

The assessment of OIF experiments under the Framework consists of the following steps: (i) an initial assessment, which ought to be conducted in order to determine whether a proposed activity falls within the definition of OIF and has proper scientific attributes, and thus is eligible to be considered and evaluated in this framework, (ii) a detailed environmental impact assessment (EIA), (iii) decision-making on the experiment concerned, and (iv) subsequent monitoring which shall inform future decision-making and improve future assessments.⁴² This process strongly relies on the elements of risk characterization and risk management and thus reflects an implementation of the precautionary approach, thereby indirectly establishing a nexus between the realms of the international law of the sea on the one hand and international environmental law on the other. In this respect, the Assessment Framework provides that:

[i]f the risks and/or uncertainties are so high as to be deemed unacceptable, with respect to the protection of the marine environment, taking into account the precautionary approach, then a decision should be made to seek revision of or reject the proposal.⁴³

Which risks and/or uncertainties can be deemed to be unacceptable, however, is not clarified by the framework – a fact which, as does the explicit reference to the precautionary approach,⁴⁴ demonstrates that the assessment process might be informed by recourse to the requirements of international environmental law as well as socio-political discourses reaching beyond the law.⁴⁵

The regulation of ocean NETs, particularly CDR technologies, under the LC/LP is thus based on a multi-level approach: while the decision on the admissibility of an OIF experiment is not taken at the international level but by the Contracting Party under whose jurisdiction the experiment is conducted, the competent authority at the national level must observe the requirements of the LC/LP. Due to Article 210(6) UNCLOS, this also applies to States Parties to the UNCLOS which have *not* acceded to the LC and LP. These requirements include that only those experiments can be permitted that comply with the Assessment Framework adopted by the MOP. If that is the case,

³⁸ IMO Doc. LC 30/16, Annex 6, Resolution LC-PL.1 (2008), 31 October 2008, *Regulation of Ocean Fertilization*, para. 4.

³⁹ *Ibid.*, para. 5.

⁴⁰ IMO Doc. LC 32/15, Annex 6, Resolution LC-PL.2 (2010), 14 October 2010, *Assessment Framework for Scientific Research Involving Ocean Fertilization*.

⁴¹ *Ibid.*, paras. 1 and 3.

⁴² For a summary of the assessment process see *ibid.*, para. 1.3.

⁴³ *Ibid.*, para. 4.3.

⁴⁴ See also *ibid.*, paras. 1.3.2.6 and 3.6.1.

⁴⁵ The 2019 GESAMP Report (Boyd and Vivian (note 10), p. 82) notes that ‘[t]o date, there have been no known approaches to have an OF study tested by the OFAF.’ The impact of the Assessment Framework has thus remained limited so far.

a planned CDR experiment can be assumed to constitute legitimate scientific research in line with the objectives of the LC/LP and is thus approvable. At the same time, in consideration of the general object and purpose of the LC and LP (namely to prevent pollution of the marine environment), and taking into account the wording of Resolution LC-LP.1 on the Regulation of Ocean Fertilization (“ocean fertilization activities other than legitimate scientific research should not be allowed”), it would arguably go too far to interpret this Resolution in such a way as to consider the Contracting Parties to the LC/LP to be under a legal duty to authorize (whether to State organs or other actors) experiments which qualify as legitimate scientific research. A different conclusion could potentially be drawn from a contextual interpretation, or application respectively, of the LC/LP in line with the climate change regime and, on the level of domestic law, the individual right of researchers to freedom of science.

C. 2013 Amendment to the London Protocol

Following a proposal submitted by Australia, Nigeria and Korea, the MOP in October 2013 adopted by consensus an amendment to the LP,⁴⁶ by which the scope of the Protocol was expressly extended to the regulation of “marine geoengineering” activities in their entirety.⁴⁷ A new Article 1.5*bis* defines “marine geoengineering” as the “deliberate intervention in the marine environment to manipulate natural processes, including to counteract anthropogenic climate change and/or its impacts, and that has the potential to result in deleterious effects, especially where those effects may be widespread, long lasting or severe”. For the current purposes, it should be noted that the term “geoengineering” is not used in the present study but is understood here as broadly referring to ocean NETs.⁴⁸ Apart from the definition, the Amendment furthermore prescribes binding criteria to distinguish scientific research from actual deployment. The applicability of the (amended) Protocol to a specific ocean-based NETs depends on whether the Contracting Parties have decided to include the activity concerned in the new Annex 4 to the Protocol. At this stage, OIF is the only activity listed on Annex 4 but, theoretically, other ocean NETs that go beyond scientific research could also be included in Annex 4 LP.

Notwithstanding inclusion of an activity in Annex 4 LP, Article 6*bis* LP goes on to prohibit the placement of matter for “marine geoengineering” activities “*unless* the listing provides that the activity or the subcategory of an activity may be authorized under a permit”.⁴⁹ Under this regulatory approach, the approvability of an ocean NETs does not result from the inclusion of the technique concerned in Annex 4 LP, but only from the fact that the conditions for approvability mentioned in Annex 4 are fulfilled in the specific case. In addition, Article 6*bis*.2 LP requires that

⁴⁶ IMO Doc. LC 35/15, Annex 4, Resolution LP.4(8), 18 October 2013, *Amendment to the London Protocol to Regulate the Placement of Matter for Ocean Fertilization and other Marine Geoengineering Activities*.

⁴⁷ For an initial assessment see H Ginzky and R Frost, ‘Marine Geo-Engineering: Legally Binding Regulation under the London Protocol’, *Carbon & Climate Law Review* 8 (2014), pp. 82–96.

⁴⁸ There are several definitions of what might constitute “geoengineering”, with the definition provided by the Parties to the Convention on Biological Diversity (CBD) being one of the most often cited. According to footnote 3 of CBD Decision X/33 on Biological Diversity and Climate Change of 29 October 2010, the term “geoengineering” covers both CDR and RM technologies. The Royal Society defines “geoengineering” as the “deliberate large-scale manipulation of the planetary environment to counteract anthropogenic climate change” (*Geoengineering the Climate: Science, Governance and Uncertainty* (2009), p. 1). However, it must be noted that the term “geoengineering” is not used in this study and has largely been replaced in literature by terminology such as ocean NETs or “ocean interventions for climate change mitigation” (see IMO Doc. LC/SG 44/3/Add.1, 29 March 2021, *Marine Geoengineering: Advice from GESAMP Working Group 41 to the London Protocol Parties to Assist them in Identifying Marine Geoengineering Techniques that it Might be Prudent to Consider for Listing in the New Annex 4 of the Protocol*).

⁴⁹ Italics added. As far as OIF is concerned, Annex 4 provides that an ocean fertilization activity may only be considered for a permit if it is assessed as constituting legitimate scientific research taking into account any specific placement assessment framework.

the Contracting Parties “adopt administrative or legislative measures to ensure that the issuance of permits and permit conditions comply with provisions of annex 5 and takes into account any Specific Assessment Framework developed for an activity and adopted by the Meeting of the Contracting Parties”. Thus, approval of any ocean NETs, for experimental or deployment purposes, presupposes that (i) the technology concerned is included in Annex 4, (ii) the requirements of the General Assessment Framework included in Annex 5 are met, and (iii) the conditions prescribed in Annex 4 regarding the specific ocean NET, which are envisaged to include specific assessment frameworks (such as the one that currently exists for OIF), are fulfilled. This particularly strict approach is then softened by the clarification that Contracting Parties meeting the terms of any specific assessment framework that has been adopted by the Parties shall be deemed to be in compliance with Annex 5.⁵⁰ Taking into account that Article 22 LP foresees that a tacit acceptance procedure be applied in relation to amendments of the Annexes to the LP, the approach chosen by the 2013 amendment of the Protocol renders the novel regime established for ocean NETs sufficiently flexible, as it can be adapted to future developments more easily by mere amendment of Annex 4.

The amendment has the merit of being the first binding international regulation explicitly applicable to ocean NETs. However, with only six acceptance instruments currently deposited with the IMO (out of the two thirds of Contracting Parties required for adoption), the amendments have not yet entered into force.⁵¹ The listing of activities in an annex to an amendment that has thus far struggled to gain any momentum in ratifications, runs the risk of increasing – rather than negating – the hesitancy of States to ratify the amendment. It should also be remembered that the 2013 amendments are aimed at protecting the marine environment *from* NETs, and not at governing research or development of marine CDR technologies. In the words of commentators, “[the 2013 amendment] is an amendment to an existing environmental protection treaty and its capacity to provide a comprehensive governance framework for marine geoengineering activities will therefore be limited by the aims, scope and membership of the London Protocol itself”.⁵²

Having highlighted that the regulatory regime for ocean-based NETs under the London Protocol is distinguished, first, by the 2013 amendments entering into force and, second, by the listing of activities under Annex 4, brief mention should be made of the most recent report of the Scientific Group of the LC/LP. In April 2021, the Scientific Group took note of the review conducted by Working Group 41 (*GESAMP Working Group on Ocean Interventions for Climate Change Mitigation*) that indicated a number of ocean-based NETs that the Working Group “would suggest that the London Protocol Parties might wish to consider for listing in the new Annex 4 of the Protocol”.⁵³ The Working Group suggested that six techniques should be addressed by the Scientific Groups and considered for inclusion on Annex 4, namely (1) fertilization for fish stock enhancement; (2) macroalgae cultivation for sequestration including artificial upwelling; (3) reflective particles/material; (4) adding alkaline material directly to the ocean; (5) coastal spreading of olivine; and (6) mineralization in rocks under the seabed.

⁵⁰ See Annex 5, para. 3.

⁵¹ The London Protocol currently has 53 States parties, with the most recent acceptance instrument for the 2013 amendments being deposited by Germany in March 2020 (see <<https://wwwcdn.imo.org/localresources/en/About/Conventions/StatusOfConventions/Status%20-%202021.pdf>>, p. 566).

⁵² K Brent, W Burns and J McGee, *Governance of Marine Geoengineering: Special Report* (2019), p. 45.

⁵³ IMO Doc. LC/SG 44/16, Report of the Forty-fourth Meeting of the Scientific Group of the London Convention and the Fifteenth Meeting of the Scientific Group of the London Protocol, para. 3.7.

IV. The Attribution of Private Conduct to that of a State

Section III has demonstrated the general applicability of UNCLOS to most, if not all, ocean NETs. Additionally, it has been shown that for those technologies that involve the introduction of substances into the marine environment, the international rules and standards – as adopted under the LC/LP – may in future apply to a number of ocean NETs. With this in mind, the following section discusses the ILC’s Articles on State Responsibility (ASR) especially as they relate to the attribution of private conduct to that of the State. In doing so, account is taken of the fact that private conduct is only attributable to a State in exceptional circumstances. After this discussion, the remainder of the section highlights situations where UNCLOS directly or indirectly addresses private actors in order to ascertain the extent of the relationship that exists, if at all, between UNCLOS and private actors.

A. Attribution under the Articles on State Responsibility

The term attribution denotes “the legal operation having as its function to establish whether given conduct of a physical person, whether consisting of a positive action or an omission, is to be characterized, from the point of view of international law, as an ‘act of the State’”.⁵⁴ In other words, attribution is the evaluation of the connection between an act or omission and the State in order to conclude whether or not it is a State – and not some other actor – which has acted in a particular case.⁵⁵ In the words of the former special rapporteur, “the rules of attribution play a key role in distinguishing the ‘State sector’ from the ‘non-State sector’”.⁵⁶ Generally speaking, an action or omission is attributable to a State if it has acted through one of its organs.⁵⁷ In contrast, private conduct is usually not attributable to a State.⁵⁸

With the exception of situations where private actors such as companies or private research institutes have been empowered by domestic law to exercise governmental authority (see Article 5 ASR), the law on State responsibility recognizes only two situations where private conduct may be attributed to a State. First, according to Article 8 ASR:

The conduct of a person or group of persons shall be considered an act of a State under international law if the person or group of persons is in fact acting on the instructions of, or under the direction or control of, that State in carrying out the conduct.

Article 8 evidently deals with two alternative circumstances – i.e., a private actor (1) under the instruction of, or (2) under the direction or control of the State. With regards to actions under the instruction or authorisation of the State, the ILC commentaries to Article 8 make clear that:

The attribution to the State of conduct in fact authorized by it is widely accepted in international jurisprudence. In such cases it does not matter that the person or persons involved are private individuals nor whether their conduct involves ‘governmental activity’. Most commonly, cases of

⁵⁴ L. Condorelli and C. Kress, “The Rules of Attribution: General Considerations”. In: J. Crawford, A. Pellet and S. Olleson (eds.) *The Law of International Responsibility*, 2010, p. 221.

⁵⁵ ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Yearbook of the ILC 2001-II/2, 52, Commentary to Art. 2, para. 6.

⁵⁶ J. Crawford, First Report on State Responsibility, ILC Yearbook, 1998, vol. II(1), 33–34, para. 154.

⁵⁷ ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Yearbook of the ILC 2001-II/2, 52, Art. 4; see the Case Concerning Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v Uganda), Judgment, ICJ Reports 2005, 168, para. 213), where the ICJ held that the “conduct of the UPDF as a whole is clearly attributable to Uganda, being the conduct of a State organ”.

⁵⁸ ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Yearbook of the ILC 2001-II/2, 52, Commentary to Art. 8, para. 1.

this kind will arise where State organs *supplement their own action by recruiting or instigating* private persons or groups who act as ‘auxiliaries’ while remaining outside the official structure of the State.⁵⁹

The existence of a relationship between either the instructions given or the direction or control exercised, will have to be determined by the facts of each case and the specific conduct complained of.⁶⁰ In the absence of a definition as to what is meant by “control”, attribution of private conduct to that of a State under Article 8 presents several difficulties in practice. That said, it should be stressed that the jurisprudence of the ICJ confirms a restrictive approach to what is meant by “controlled by a State”. According to the ICJ, the State must have “effective control” (which is stricter than providing mere support or finance) over the private conduct in question for such conduct to be attributed to it.⁶¹ While a somewhat looser approach was adopted by the International Criminal Tribunal for the Former Yugoslavia (ICTY) in the *Tadić* decision (requiring “overall control” rather than effective control),⁶² it must be highlighted that the ICTY dealt with individual criminal responsibility rather than State responsibility as encapsulated in the ASR. According to the ICJ, the overall control test broadens the connection – almost to breaking point – that must exist between the conduct of other actors and a State’s international responsibility.⁶³ Although international jurisprudence appears to support the “effective control” test, there is some international practice that suggests a “tendency to move beyond a rigorously restrictive conception”.⁶⁴ However, given the application of the “overall control” test to individual criminal responsibility as opposed to the “effective control” test’s application to State responsibility more generally, it seems reasonable to conclude that the attribution of private conduct to a State under Article 8 ASR, and in the context of ocean NETs, is likely to follow a more restricted approach.

The second situation where private conduct may be attributed to a State is found in Article 11 ASR, according to which private conduct is attributable to the State if it “acknowledges and adopts the conduct in question as its own”, either expressly or tacitly through conduct.⁶⁵ Article 11 ASR is founded on the principle that private conduct can generally not be attributed to a State. However, Article 11 recognises that conduct should “nevertheless” be considered as an act of a State “if and to the extent that the State acknowledges and adopts the conduct in question as its own”.⁶⁶ Considering that support for attribution as contained in Article 11 is doubtful in State practice, the classification that this form of attribution should be considered as the “most extreme

⁵⁹ ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Yearbook of the ILC 2001-II/2, 52, Commentary to Art. 8, para. 2 [emphasis added].

⁶⁰ ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Yearbook of the ILC 2001-II/2, 52, Commentary to Art. 8, para. 7.

⁶¹ See *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v United States of America)*, Judgment, ICJ Reports 1986, 14; and *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v Serbia and Montenegro)*, Judgment, ICJ Reports 2007, 43.

⁶² *Prosecutor v Duško Tadić*, Appeals Chamber Judgement, ICTY Case no. IT-94-1-A.

⁶³ *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v Serbia and Montenegro)*, Judgment, ICJ Reports 2007, 43, para. 406; J. Klabbers, *International Law*, 2021, p. 143.

⁶⁴ L. Condorelli and C. Kress, “The Rules of Attribution: General Considerations”. In: J. Crawford, A. Pellet and S. Olleson (eds.) *The Law of International Responsibility*, 2010, p. 227.

⁶⁵ ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Yearbook of the ILC 2001-II/2, 54, Commentary to Art. 11, para. 9.

⁶⁶ ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Yearbook of the ILC 2001-II/2, 54, Commentary to Art. 11, para. 3.

consequence” of attributing private acts seems warranted.⁶⁷ In contrast to Article 8, and in fact all other rules of attribution as contained in the ASR, Article 11 is concerned with conduct that was not attributable to the State at the time the act was commissioned, but which action is subsequently accepted and adopted by the State as its own (*ex post facto* attribution).⁶⁸ In explaining the content of this rule, the ILC relied on the *Tehran Hostages Case*.⁶⁹ In this case, the ICJ distinguished between two phases in the attack of the US Embassy in Tehran. In so doing, the ICJ first acknowledged that the militants who initially attacked and occupied the Embassy were not acting as State agents – neither *de jure* nor *de facto*.⁷⁰ However, in the second phase, the Court found that not only did Iran fail to resolve the situation, they actually endorsed the attack and occupation of the Embassy:

The approval given to these facts by the Ayatollah Khomeini and other organs of the Iranian State, and the decision to perpetuate them, translated continuing occupation of the Embassy and detention of the hostages into acts of that State. The militants, authors of the invasion and jailers of the hostages, had now become agents of the Iranian State for whose acts the State itself was internationally responsible.⁷¹

The above said, Article 11 (read together with the ILC ASR) lacks clear direction as to the distinction between the adoption of certain conduct versus simple approval and how these situations should be distinguished.⁷² This lack of sufficiently clear direction is made worse when it is considered that that the acknowledgement of conduct of a private actor by a State might be either express or inferred (see the example below). Attribution as contained under Article 11 raises challenging questions concerning the temporal and material scope of attribution. As far as the temporal scope goes, and taken in the context of ocean NETs, does the State assume attribution from the time the conduct in question takes place (at the start of the experiment or deployment), or does the State assume attribution *ab initio* – i.e., from the moment the authorisation for a particular technology is given? As far as the material scope goes, the words “if and to the extent that” in Article 11 raise questions as to whether attribution of private conduct will include the entirety of the conduct or only a part thereof and, particularly, where and how this distinction is to be made.⁷³

With attribution as contained in Article 8 and 11 ASR in mind, consider the following example:

In accordance with its obligations under the international climate change regime, particularly the Paris Agreement, State A has pledged to reduce its greenhouse gas emissions. In order to do so, State A adopts domestic legislation aimed at incentivising private companies operating under their jurisdiction or control, to reduce their individual greenhouse gas emissions. This incentive may include, for example, tax rebates for the private company in question. In order to benefit from the

⁶⁷ L. Condorelli and C. Kress, “The Rules of Attribution: General Considerations”. In: J. Crawford, A. Pellet and S. Olleson (eds.) *The Law of International Responsibility*, 2010, p. 231.

⁶⁸ ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Yearbook of the ILC 2001-II/2, 54, Commentary to Art. 11, para. 1.

⁶⁹ Case Concerning United States Diplomatic and Consular Staff in Teheran (United States of America v Iran), Judgment, ICJ Reports 1980, p. 3.

⁷⁰ *Ibid.*, para 58.

⁷¹ *Ibid.*, para. 74.

⁷² See O. De Frouville, “Attribution: Private Individuals”. In: J. Crawford, A. Pellet and S. Olleson (eds.) *The Law of International Responsibility*, 2010, p. 274.

⁷³ See O. De Frouville, “Attribution: Private Individuals”. In: J. Crawford, A. Pellet and S. Olleson (eds.) *The Law of International Responsibility*, 2010, p. 275.

domestic legislation adopted by State A, a private company applies and is granted authorization by State A to undertake extensive seaweed cultivation in the exclusive economic zone of State A. In the event that the seaweed cultivation of the private company introduces an invasive species into the marine environment – damaging fish stocks crucial to both local and commercial fishers operating under the framework of bi/multilateral fisheries agreements concluded with State A – could the negative consequences of the private company’s seaweed cultivation be attributed to State A?

Without giving any answer to the question posed in the above example, it is necessary at this stage to note the inherent tension in regulating two opposing influences – i.e., the need to defer to States on matters falling within their national affairs versus the need to provide international rules on responsibility that are effective regardless of particular national arrangements.⁷⁴ Within the context of climate change, ocean NETs provide an interesting example through which the appropriateness of the rules on attribution can be assessed. In particular, do the rules on attribution – as they relate to the attribution of private conduct to a State – adequately regulate private conduct or do the Articles offer potential for abuse whereby States may make use of “privatisation” in order to evade responsibility?

While the need to regulate the potentially negative consequences of ocean NETs is clear, neither attribution under Article 8 nor under Article 11 can currently be assumed to generally exist for ocean NETs undertaken by private actors. With regards to the first situation mentioned above, and having regard to the jurisprudence of the ICJ, the requirements to be met under Article 8 are very high (requiring that the State has “effective control” – going beyond support of financing of the conduct in question). Particularly, the granting of a permit to a private actor to carry out a certain activity (including a permit to conduct experimental research into a specific ocean NET) in the context of an authorisation procedure prescribed by national law does not lead to the activity in question being attributable to the State. Unless the authorisation or approval concerned allocates to the private actor the right to exercise elements of governmental authority (as envisaged under Article 5 ASR), such conduct does not turn the behaviour into a sovereign act.

As far as Article 11 ASR is concerned, which “provides for the attribution to a State of conduct that was not or may not have been attributable to it at the time of commission, but which is subsequently acknowledged and adopted by the State as its own”,⁷⁵ it is not sufficient that the State only supports or endorses the activity.⁷⁶ Rather, Article 11 ASR “makes it clear that what is required is something more than a general acknowledgement of a factual situation, but rather that the State identifies the conduct in question and makes it its own”.⁷⁷

The situation could possibly be assessed differently if a particular ocean NET experiment is carried out by a public research institute, i.e., a public body under the relevant national legislation. In such a case, the issue of attribution arguably must be addressed in the same way as in the case of State-owned enterprises (SOEs). However, the ILC commentaries on the ASR are only of little help as far as acts of SOEs are concerned. In particular, the ILC considered the fact that “an entity

⁷⁴ A. Mills, “State Responsibility and Privatisation: Accommodating Private Conduct in a Public Framework”, EJIL: Talk! (August 2021).

⁷⁵ ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Yearbook of the ILC 2001-II/2, 52, Commentary to Art. 11, para 1.

⁷⁶ ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Yearbook of the ILC 2001-II/2, 53, Commentary to Art. 11, para 6.

⁷⁷ ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Yearbook of the ILC 2001-II/2, 53, Commentary to Art. 11, para 6.

can be classified as public or private according to the criteria of a given legal system” as *not* being decisive for the purpose of attribution under Article 5 ASR. Quite the opposite, attribution under the rule codified in Article 5 ASR requires “that these entities are empowered, if only to a limited extent or in a specific context, to exercise specified elements of governmental authority.”⁷⁸ Taking into account that governmental authority usually becomes manifest in the exercise of powers (“empowered”) vis-à-vis private actors,⁷⁹ research activities, which are aimed at gaining new scientific insights, cannot be held to be of such nature. Thus, it must be concluded that also public research institutes are usually to be considered as private actors.

B. Private Actors and the Law of the Sea Convention

Article 305 UNCLOS provides a list of entities eligible to sign and, therefore, have access to the rights and obligations provided for as States Parties to UNCLOS. A superficial reading of this “list”, however, makes clear that the Convention is only open to States (as the primary subjects of international law) and to international organizations in accordance with Annex IX UNCLOS. Non-State actors are therefore excluded from the ambit of UNCLOS. Despite this however, non-State actors continue to play an active role in the maritime sphere, including in relation to marine environment protection, the welfare of seafarers, the mitigation of maritime security challenges – including the suppression of piracy and the fight against illegal, unregulated and unreported fishing – as well as in the exploration and exploitation of the resources of the deep seabed.⁸⁰ The conclusion that non-State actors are not bound, or at the very least influenced, by the provisions of UNCLOS is therefore somewhat hasty. With regards to the exploration and exploitation of the deep seabed, Part XI UNCLOS specifically addresses private companies (as contractors) and such private companies continue to gain influence and prominence in the Area. The below discussion proceeds on the basis that UNCLOS, like international law generally, is State-centric. However, this discussion aims to highlight those provisions of UNCLOS that directly or indirectly address non-State actors and, specifically, whether the Convention requires certain safeguards or assurances from such actors.

Part XI UNCLOS sets out an elaborate regulatory regime for the exploration and exploitation of the Area – a maritime zone defined as “the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction”.⁸¹ Pivotal in understanding the governance regime established for the Area, is the fact that this maritime zone is the common heritage of humankind.⁸² Reference to the “common heritage of humankind” principle in UNCLOS has been interpreted as permitting “new viewpoints beyond the State-to-State perspective in the law of the sea” and as increasing “room for private participation in deep seabed mining”.⁸³ It is on this basis that Article 153 UNCLOS allows for States Parties, State enterprises and private actors (with State sponsorship)

⁷⁸ All quotations from ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Yearbook of the ILC 2001-II/2, 43, Commentary to Art. 5, para 3.

⁷⁹ See also ILC, Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries, Yearbook of the ILC 2001-II/2, 43, Commentary to Art. 5, para 7: “The internal law in question must specifically authorize the conduct as involving the exercise of public authority; it is not enough that it permits activity as part of the general regulation of the affairs of the community.”

⁸⁰ C. Liss “Non-state Actors in the Maritime Domain: Non-state Responses to Maritime Security Challenges”. In: L. Otto (ed.) *Global Challenges in Maritime Security, Advanced Sciences and Technologies for Security Applications*, 2020, p. 211.

⁸¹ Art. 1(1) UNCLOS.

⁸² Art. 136 UNCLOS.

⁸³ Y. Tanaka, *The International Law of the Sea*, 2019, p. 186; A. Rocha, *Private Actors as Participants in International Law: A Critical Analysis of Membership under the Law of the Sea*, 2021, p. 97.

to undertake activities in the area.⁸⁴ Activities in the Area are carried out according to a “parallel system”, which system balances the interests of the various actors involved in deep seabed mining.⁸⁵ While it is beyond the scope of this study to provide a detailed examination of the regime established under Part XI, it is necessary to highlight that the exploration or exploitation of the mineral resources of the Area,⁸⁶ by *any* actor, can only take place with the authorisation of the International Seabed Authority (ISA) – the international organisation mandated to govern the Area and the activities that take place therein.⁸⁷

For the present purposes, particular mention should be made of the relationship between the ISA and private actors. Private actors wishing to undertake deep seabed mining in the Area must satisfy two criteria. First, such actors must be nationals of a State Party or must be effectively controlled by such State. Second, private actors must be sponsored by a State (or by all States in the case of a private actor with multiple nationalities).⁸⁸ Only after fulfilling these criteria, can a private actor submit an application to the ISA to conduct exploration or exploitation in the Area.⁸⁹ In this regard, some commentators have suggested that the institutional arrangement created by Part XI maintains the vertical legal order synonymous with traditional international law, while at the same time assigning a “State-like” role to the ISA in order to improve “participation of private miners as rights-holders and duty-bearers under the law of the sea”.⁹⁰

Since the first mining contracts were signed in 2001, a total of 31 contracts have been concluded between the ISA and States, States enterprises, or private actors. Of the 31 contracts, 6 contracts have been concluded with private actors (holding 7 contracts between them for the exploration of polymetallic nodules).⁹¹ As noted by one commentator, private actors now hold “over one fifth of ISA mining contracts and, in fact, are conducting well over a quarter of all such contracts (when joint venture activities are taken into account)”.⁹² The significant role that private actors have within the regime established by Part XI is evident. However, and despite this significance, questions remain as to whether or not the provisions of Part XI do in fact regulate the conduct of private actors? Before providing some observations to this question, it is worth repeating that the current discussion is centred around UNCLOS – i.e., the sponsorship of private actors by States Parties to the Convention. The customary nature and the extent to which Part XI applies to private actors and or non-State Parties to UNCLOS – such as Colombia, Iran, Libya, Peru, Turkey, the USA

⁸⁴ Art. 1(3) UNCLOS states that “‘activities in the Area’ means all activities of exploration for, and exploitation of, the resources of the Area”; see also Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Advisory Opinion, ITLOS Reports 2011, 10 paras. 82–97.

⁸⁵ Y. Tanaka, *The International Law of the Sea*, 2019, p. 224.

⁸⁶ Art. 133 UNCLOS defines “resources” as “means all solid, liquid or gaseous mineral resources *in situ* in the Area at or beneath the seabed, including polymetallic nodules”.

⁸⁷ Art. 157 UNCLOS.

⁸⁸ Art. 4(3) of Annex III UNCLOS.

⁸⁹ In this regard see J. Fritz (“Deep Sea Anarchy: Mining at the Frontiers of International Law” 30 (2015), *International Journal of Marine and Coastal Law*, p. 464) highlighting that “States have clearly accepted that only States can seek the right to mine minerals in the Area. With this shift it is no longer possible for a private-sector company to enter the Area and exploit marine minerals without State sponsorship”.

⁹⁰ A. Rocha, *Private Actors as Participants in International Law: A Critical Analysis of Membership under the Law of the Sea*, 2021, p. 98; J. Dingwall, *International Law and Corporate Actors in Deep Seabed Mining*, 2021, pp. 144–145; see also S. Nandan, *Administering the Mineral Resources of the Deep Seabed*. In: D. Freestone, R. Barnes and D. Ong (eds.), *The Law of the Sea – Progress and Prospects*, 2006, p. 79.

⁹¹ <<https://www.isa.org.jm/exploration-contracts>>, last accessed 27.11.2021.

⁹² J. Dingwall, *International Law and Corporate Actors in Deep Seabed Mining*, 2021, p. 67.

and Venezuela – is beyond the scope of this study.⁹³ Needless to say, the institutional machinery created by Part XI (as it relates to the establishment of the ISA), is generally not accepted as customary international law and a discussion of private actors operating in the Area and outside the regulatory authority of the ISA is, therefore, not relevant for the present purposes.

In examining whether, if at all, Part XI directly regulates the conduct of private actors in the Area, account should be taken of the three points. First, after concluding a mining contract with the ISA, the private actor in question is bound to abide by the international legal obligations concerning deep seabed mining. The reason for this is that the contract entered into between the ISA and the private actor directly incorporates the obligations contained in UNCLOS.⁹⁴ By way of example, the Regulations for the Exploration of Polymetallic Nodules (Nodule Regulations) includes both a mining contract template as well as standard clauses which form the basis of any contract between the ISA and a private actor for the exploration of polymetallic nodules. The Nodule Regulations, together with the standard clauses, make clear that a contract for the exploration of polymetallic nodules in the Area are subject to the mining regime established under UNCLOS⁹⁵ Section 13 of the standard clauses goes on to state that private actors “shall carry out exploration in accordance with the terms and conditions of this contract, the Regulations, [and] Part XI of [UNCLOS]”, and Section 27.1 follows up by stating that the mining contract is to be governed by “the rules, regulations and procedures of the Authority, [and] Part XI of [UNCLOS]”. The situation is no different with regards to the exploration of the other resources managed by the ISA – polymetallic sulphides and cobalt-rich ferromanganese crusts. On this basis, it has been concluded that the standard clauses (as incorporated into a mining contract) “transpose the content of the [UNCLOS] provisions regarding activities in the Area and of the Regulations into the contractual arrangement” with private actors and thereby creates “internationalised functional contracts”.⁹⁶ Such contracts are often concluded by international organisations to directly implement their functions, where “internationalisation proceeds from the need of the organization to safeguard the execution of its core functions.”⁹⁷

Second, a private actor operating under Part XI is subject to international responsibility “for any damage arising out of wrongful acts in the conduct of its operations”.⁹⁸ Third, and related to the previous point, is that private actors (operating as contractors for the purposes of Part XI) have *locus standi* before the Seabed Disputes Chamber of ITLOS to participate in certain categories of seabed mining disputes.⁹⁹

Section IV has made clear that it is generally not the role of the law of state responsibility to attribute conduct to actors outside of the traditional State structure. That said, the above analysis has also shown that, as a matter of international law, UNCLOS has enough flexibility through which direct obligations may be imposed on private actors operating under ISA contracts in the

⁹³ For a discussion in this regard, see J. Dingwall, *International Law and Corporate Actors in Deep Seabed Mining*, 2021, pp. 150–195.

⁹⁴ To this end, the ISA has developed Regulations for polymetallic nodules (<https://isa.org.jm/files/files/documents/isba-19c-17_0.pdf>), polymetallic sulphides (<https://isa.org.jm/files/files/documents/isba-16a-12rev1_0.pdf>), and cobalt-rich ferromanganese crusts (https://isa.org.jm/files/files/documents/isba-18a-11_0.pdf).

⁹⁵ See Regulation 1 and Section 1 of Annex IV of the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters, < https://isa.org.jm/files/files/documents/isba-19c-17_0.pdf> [Nodule Regulations].

⁹⁶ M. Karavias, *Corporate Obligations under International Law*, 2013, pp. 117–126.

⁹⁷ J. Dingwall, *International Law and Corporate Actors in Deep Seabed Mining*, 2021, p. 147.

⁹⁸ Art. 22 of Annex III UNCLOS.

⁹⁹ Arts. 187(c)–(e) UNCLOS; J. Dingwall, *International Law and Corporate Actors in Deep Seabed Mining*, 2021, p. 148.

Area. However, it must be stated that the creation of these obligations and their subsequent imposition on private actors is premised on the fact that States have consented to this unique arrangement. In the absence of any specifically adopted regime, it would appear that the applicability of international obligations to private actors is the exception rather than the rule. Section IV has further highlighted that the “privatisation” of certain activities may bring into question the comprehensiveness of the rules on attribution as they pertain to international responsibility. These gaps in international responsibility concerning non-State actors – including private companies and private research consortia – has led to the use of alternative mechanisms that are aimed at attributing responsibility back to the State. Such mechanisms include increased attention, both in practice and international legal scholarship, being paid to lowering “the threshold for the attribution of various control tests, as well as shifting focus to the due diligence obligations of the State”.¹⁰⁰ With this in mind, section V returns to an analysis of ocean NETs under UNCLOS. Specifically, the next section examines the obligations of States in ensuring that ocean NETs conducted by private actors, under their jurisdiction or control, are regulated in accordance with international law. This examination necessarily involves a close look into the due diligence obligations of States as they relate to particular provisions of UNCLOS.

V. Due Diligence Obligations, Ocean-based NETS and UNCLOS

While it will in most instances not be possible to attribute the actions or omissions of private actors to States, this does not mean that States are free of their obligations to oversee the private actors. Particularly under UNCLOS, States are subject to various obligations – many of them due diligence obligations – aimed both at protecting the marine environment and indirectly regulating the conduct of private actors (albeit through obligations imposed on the State rather than the private actor concerned). With this in mind, the following section first highlights certain provisions of UNCLOS that place due diligence obligations on States to oversee private conduct under their jurisdiction or control, before providing some observations on how such due diligence obligations can be given content – including a discussion of environmental impact assessments (EIA) and the precautionary approach.

A. Due Diligence Obligations and UNCLOS

In the absence of a regime established specifically with ocean NETs in mind – as is the case for seabed mining in the Area – Part XII UNCLOS is particularly relevant. Part XII UNCLOS sets out several obligations on States in protecting and preserving the marine environment. Many of these obligations are framed as obligations “to ensure” which obligations have been found, on numerous occasions, to constitute obligations of conduct. As opposed to obligations of result – requiring, in each and every case, a specified result – obligations of conduct under international environmental law are obligations to adopt and enforce regulatory administrative measures to achieve a given environmental goal.¹⁰¹ Articles 192 and 194 UNCLOS require that States protect and preserve the marine environment and to ensure that activities under their jurisdiction or control do not cause damage by pollution to other States and their environment. Following the reasoning in the *South China Sea Arbitration*, “Articles 192 and 194 set forth obligations not only in relation to activities directly taken by States and their organs, but also in relation to ensuring

¹⁰⁰ K. Creutz, *State Responsibility in the International Legal Order: A Critical Appraisal*, 2020, p. 121.

¹⁰¹ *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, ICJ Reports 2010, 14 para. 187; see also *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, Advisory Opinion, ITLOS Report 2011, 10 para. 110 stating that obligations of conduct require that States “deploy adequate means, to exercise best possible efforts, to do the utmost, to obtain this result”.

activities within their jurisdiction and control do not harm the marine environment”.¹⁰² Article 194 additionally imposes a strong ecological responsibility on States (Article 194(5)) and places obligations on States that go beyond the prevention, reduction, and control of pollution.¹⁰³ Such obligations are necessarily important for ocean NETs that have the potential to cause pollution of the marine environment or that may endanger marine living organisms.

Concretising the more general obligations in Articles 192 and 194, specific mention should also be made of the due diligence obligation as contained in Article 196, according to which States must “take all measures necessary to prevent, reduce and control pollution of the marine environment resulting from the use of technologies [...], or the intentional or accidental introduction of species, alien or new”. While Article 194 calls on States to prevent pollution from *any source*, Article 196 provides greater specificity – applying to the use of technologies or the introduction of alien or new species. It is submitted that reference to “technologies” in this context is open ended and is broad enough so as to apply to ocean NETs.¹⁰⁴ Article 196 presents another example of the progressive nature of certain UNCLOS provisions, requiring that States remain aware of future developments and the need to regulate the behaviour of private actors taking part in such new technologies. This finding may point to the conclusion that Article 196 provides a somewhat narrower due diligence standard than the one found in Articles 192 and 194. In fulfilling their due diligence obligations in protecting and preserving the marine environment under these Articles, it is reasonable to conclude that States do not need to adopt laws or regulations directly addressing ocean NETs. However, the same conclusion is perhaps not true in relation to the more onerous due diligence obligation in Article 196. This is not to say that the due diligence obligation in Article 196 is automatically stricter, but rather to say that any regulation of the use of ocean NETs – understood as the “use of technology” in Article 196 – may have to apply to *specific* ocean NETs activities, and States may not necessarily rely on the same general laws adopted in fulfilment of their due diligence obligations under Articles 192 and 194.

In addition to the pollution prevention provisions of UNCLOS already discussed in this study (see section III), specific mention can also be made here to Article 212 UNCLOS. Article 212(1) requires that States “adopt laws and regulations to prevent, reduce and control pollution of the marine environment from or through the atmosphere, applicable to their air space under their sovereignty and to vessels flying their flag or vessels or aircraft of their registry, taking into account internationally agreed rules, standards and recommended practices and procedures and the safety of air navigation”. Article 212 additionally obligates that States endeavour to establish global and regional rules to prevent, reduce and control pollution from or through the atmosphere. With this in mind, specific mention should be made of the recent ILC Draft Guidelines on the Protection of the Atmosphere (Atmosphere Guidelines). Provisionally adopted by the ILC in May 2021, Guideline 7 states that:

Activities aimed at intentional large-scale modification of the atmosphere should only be conducted with prudence and caution, and subject to any applicable rules of international law, including those relating to environmental impact assessment.

The commentaries to the Atmosphere Guidelines make evident that “activities” in the context of Guideline 7 should be understood as referring to “geo-engineering”, including those technologies

¹⁰² The South China Sea Arbitration (The Republic of Philippines v. The People’s Republic of China), Final Award (2016) PCA 2013-19, para. 944.

¹⁰³ “Czybulka, Article 194, mn 12”, in: Proelss, UNCLOS, 2017.

¹⁰⁴ “Czybulka, Article 196, mn 2”, in: Proelss, UNCLOS, 2017.

classified as either CDR or RM.¹⁰⁵ The commentaries to Guideline 7 also make clear that it does not seek to “authorize or to prohibit such activities” but acknowledges that any benefit generally must be balanced with the potentially “unexpected effects on existing climatic patterns that are not confined by national boundaries”.¹⁰⁶ While unbinding, the specific reference to activities aimed at intentional large-scale modification of the atmosphere in the Atmosphere Guidelines of the ILC provides yet another example of the variable nature of due diligence as well as the difficulty in establishing standardised criteria to identify breaches of a State’s due diligence obligations.

At this point, reference can be made to the advisory opinion of the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea (ITLOS SDC) which describes the due diligence obligation as variable and susceptible to “change over time as measures considered sufficiently diligent at a certain moment may become not diligent enough in light, for instance, of new scientific or technological knowledge. It may also change in relation to the risks involved in the activity”.¹⁰⁷ This finding has previously been supported by the ICJ when it stated that:

Due diligence entails not only the adoption of appropriate rules and measures, but also a certain level of vigilance in their enforcement and the exercise of administrative control applicable to public and private operators, such as the monitoring of activities undertaken by such operators.¹⁰⁸

Therefore, as research into certain ocean NETs advances, the threshold of due diligence may increase or decrease accordingly. This is particularly relevant in the present context since certain ocean NETs, especially those that may be relatively cheap and technically easy to deploy, may be conducted by private actors.¹⁰⁹ Taking into account that there is no uniform standard of due diligence that would apply independent of the circumstances of a specific case,¹¹⁰ it is not easy to identify general criteria for when a State has violated its due diligence obligations with regards to individual ocean NETs. That said, it must be borne in mind that as far as the realm of international environmental law is concerned, the obligation to exercise due diligence is conceptionally related to the principle of prevention.¹¹¹ A State is therefore obliged to take all possible and reasonable measures to avoid likely transboundary environmental damage. This has also been confirmed by the ILC in its Draft Articles on Prevention of Transboundary Harm from Hazardous Activities:

“The obligation of the State of origin to take preventive or minimization measures is one of due diligence. It is the conduct of the State of origin that will determine whether the State has complied with its obligation under the present articles. The duty of due diligence involved, however, is not intended to guarantee that significant harm be totally prevented, if it is not possible to do so. In

¹⁰⁵ ILC, Draft Guidelines on the Protection of the Atmosphere, commentary to Guideline 7, para. 3 <<https://legal.un.org/ilc/reports/2021/english/chp4.pdf>>.

¹⁰⁶ ILC, Draft Guidelines on the Protection of the Atmosphere, commentary to Guideline 7, paras. 7 and 9.

¹⁰⁷ Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Advisory Opinion, ITLOS Report 2011, 10 para. 117.

¹⁰⁸ Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, ICJ Reports 2010, 14 para. 197.

¹⁰⁹ Hubert, International Legal and Institutional Arrangements Relevant to the Governance of Climate Engineering Technologies. In Florin (ed.), International Governance of Climate Engineering. Information for policymakers (2020), Lausanne: EPFL International Risk Governance Center (IRGC), 51.

¹¹⁰ ITLOS, Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Advisory Opinion, ITLOS Reports 2011, 10 para. 117.

¹¹¹ See Proelss, Prinzipien des internationalen Umweltrechts. In: Proelss (ed.) Internationales Umweltrecht, 2017, pp. 77-78.

that eventuality, the State of origin is required, as noted above, to exert its best possible efforts to minimize the risk. In this sense, it does not guarantee that the harm would not occur.”¹¹²

If applied in an ocean NETs context, these authoritative statements can only be understood in such a way that whenever the organs of a State have active knowledge of a particular ocean NET planned by private actors or research consortia, which is likely to result in significant transboundary harm, and yet refrain from taking action to prevent the activity concerned, the State violates its due diligence obligation. This is all the more the case when a State does not subsequently monitor a particular ocean NETs experiment which has been authorized by one of its agencies.¹¹³ If a State, by way of regulation, creates incentives (presumed to be lawful) for private behaviour that could possibly lead to transboundary environmental damage, it is obliged to take all possible steps to ensure that no damage occurs. Whether or not the same can be said in situations where a State makes no effort to regulate a certain conduct that, if engaged in, is likely to cause environmental damage, is not completely clear. On the one hand, a State cannot be expected, by reference to its duty of care, to regulate any hypothetical conduct without there being real evidence that the conduct in question will occur. Once such evidence exists (e.g. because a particular CDR experiment has been publicly announced, or the competent authority becomes aware of it by other means), however, the State is under an obligation to take preventive action (understood here in terms of a due diligence duty).

B. The Content of Due Diligence Obligations?

International courts and tribunals have interpreted the prevention principle, having its origins in the obligation of due diligence, as including certain procedural obligations concerned with EIAs and the duties to consult and notify.¹¹⁴ As far as the specific content of measures taken in fulfilment of a due diligence obligation are concerned, the ICJ clarified in the Pulp Mills case that “due diligence, and the duty of vigilance and prevention which it implies, would not be considered to have been exercised” if an activity which may potentially affect the environment of another State is not subjected to an EIA on the potential effects of that activity before it is carried out.¹¹⁵ The standard of due diligence to be applied by a State may also be specified by reference to the relevant documents adopted by international actors such as the Conference of the Parties (COPs) or Meetings of States Parties (MOPs) of pertinent multilateral environmental agreements, whose treaty mandates cover the potential negative effects of ocean NETs.¹¹⁶ In this respect, CBD Decision X/33 calls upon States parties to the CBD to ensure that no ocean NETs take place “with the exception of small scale scientific research studies that would be conducted in a controlled setting [...], and only if they are justified by the need to gather specific scientific data and are

¹¹² ILC, Draft Articles on on Prevention of Transboundary Harm from Hazardous Activities, Yearbook of the ILC 2001/II-2, 148, Commentary to Art. 33, para. 7.

¹¹³ See also Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, ICJ Reports 2010, 14 para. 197; ITLOS, ITLOS, Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Advisory Opinion, ITLOS Reports 2011, 10 para. 138.

¹¹⁴ Certain Activities Carried out by Nicaragua in the Border Area (Costa Rica v. Nicaragua), Compensation owed by the Republic of Nicaragua to the Republic of Costa Rica, Judgment, ICJ Reports 2018, 26 para. 168; Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, ICJ Reports 2010, 14 para. 204; see generally Brent et al., Does the ‘No-Harm’ Rule Have a Role in Preventing Transboundary Harm and Harm to the Global Atmospheric Commons from Geoengineering?, *Climate Law* 5 (2015) 35-63.

¹¹⁵ See also Pulp Mills on the River Uruguay (Argentina v. Uruguay), Judgment, ICJ Reports 2010, 14 para. 204.

¹¹⁶ Birnie et al., *International Law and the Environment*, 3rd ed., 2009, 149-150: “[A] useful approach is to look at internationally agreed minimum standards set out in treaties or in the resolutions and decisions of international bodies such as IMO or IAEA. [...] It follows that, quite apart from their incorporation by treaty, such international standards may acquire customary force by virtue of the obligation of due diligence if international support is sufficiently widespread and representative.” See also Dupuy/Viñuales, *International Environmental Law*, 2015, 313.

subject to a thorough prior assessment of the potential impacts on the environment”.¹¹⁷ While this Decision is not legally binding *sensu stricto*, the ILC stated in the context of its work on subsequent agreements and subsequent practice in relation to the interpretation of treaties that “interpretative resolutions by Conferences of States Parties which are adopted by consensus, even if they are not binding as such, can nevertheless be subsequent agreements under article 31, paragraph 3(a), or subsequent practice under article 31, paragraph 3(b)” of the Vienna Convention on the Law of Treaties.¹¹⁸ Consequently, there is good case to argue that the requirements contained in this Decision, which was adopted by consensus, can be relied upon when assessing whether or not a State has acted in line with its due diligence obligation to prevent significant transboundary harm. Similarly, States parties to the London Protocol are arguably not free to disregard the resolutions that have been adopted by the MOP vis-à-vis ocean NETs, and future developments in relevant fora will further impact on what can be expected from States when analysing whether they have observed the pertinent standard of due diligence. In all that, it must be borne in mind that “[t]he standard of due diligence has to be [more severe for the riskier activities].”¹¹⁹ Thus, in light of the fact that due to the environmental (and other) risks involved, the distinction between testing and deployment of ocean NETs cannot as easily be drawn as, for example, in the context of seabed mining. It may be that the due diligence standard to be applied in the context of individual ocean NETs may therefore be stricter, and less flexible, than with regard to other activities.

In examining the potential content of a due diligence obligation as it relates to ocean NETs under UNCLOS, mention should also be made here of the application of the precautionary principle/approach – which principle has been encapsulated in various international instruments (including the London Protocol and UNCLOS). At its most general level, the precautionary principle means that States:

agree to act carefully and with foresight when taking decisions that concern activities that may have an adverse impact on the environment. A more focused interpretation provides that the principle requires activities and substances, which may be harmful to the environment, to be regulated, and possibly prohibited, even if no conclusive or overwhelming evidence is available as to the harm or likely harm they may cause to the environment.¹²⁰

The following discussion accepts that there is considerable disagreement concerning the principle’s acceptance as an “approach” or a “principle”, and such discussion is beyond the scope of this report.¹²¹ Notwithstanding this, the precautionary principle may prove to be a fundamental component in decision making processes that involve the implementation and development of ocean NETs – as activities that are often grounded in uncertainty and that may pose potential for

¹¹⁷ CBD X/33, para. 8(w).

¹¹⁸ UN Doc A/69/10, Report of the International Law Commission on the Work of its Sixty-Sixth Session (2014), Chapter VII, Commentary to Draft Conclusion 10, 76, para. 38. Note that the ILC made specific reference to resolutions adopted by the parties to the London Convention and protocol vis-à-vis “geoengineering”; *ibid.*, para. 12; Vienna Convention on the Law of Treaties, 23 May 1969, 1155 UNTS 331 (entered into force 27 January 1980).

¹¹⁹ ITLOS, Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area, Advisory Opinion, ITLOS Reports 2011, 10 para. 117.

¹²⁰ Sands & Peel, Principles of International Environmental Law, 4th ed., 2018, 234.

¹²¹ Reference to the term “approach” instead of “principle” is preferred by commentators who argue in favour of a more flexible handling of environmental risks the occurrence of which is subject to scientific uncertainty. However, this understanding can arguably not be held to be reflected in binding international law; see Birnie et al., International Law and the Environment, 2009, p. 155; Proelss, Prinzipien des internationalen Umweltrechts. In: Proelss (ed.) Internationales Umweltrecht, 2017, p. 89.

significant and detrimental impacts to the environment.¹²² The ITLOS SDC has acknowledged the growing acceptance and application of the precautionary approach by referring, first, to its intrinsic link to a State's due diligence obligation and, second, by highlighting an international "trend towards making this approach part of customary international law".¹²³ In contrast to the prevention principle – which principle assumes knowledge of a cause-effect relationship – the precautionary principle:

applies even where the likelihood of the materialisation of a risk is uncertain. The somewhat irrelevance of scientific certainty, of damage, and of causality means that the legal obligation boils down to a duty to act diligently. Importantly, a lack of diligence triggers state responsibility even if no harm occurs. Therefore, due diligence no longer limits accountability, but can generate it.¹²⁴

The above has demonstrated the variable nature of due diligence, the need for different "diligence standards" to apply for inherently riskier activities, and has explained the role of EIAs and the precautionary principle in giving content to due diligence obligations owed by States. With these observations in mind, some brief remarks should be made about the due diligence obligations on States to oversee private conduct, especially as it relates to the international climate change regime. A detailed analysis of the climate change regime is beyond the scope of the present study. However, it must be noted that the foundations of this regime are grounded on the principle of "common but differentiated responsibilities".¹²⁵ In line with this, and given differences in greenhouse gases emitted by developed and developing States, questions may be asked whether the variable nature of due diligence obligations necessitates that the same obligation in the same provision of UNCLOS should be more or less strict depending, not only on the activity, but also on the actor involved? Within the climate change regime, the "differentiation based on contributions to environmental harm, is also part of the normative architecture of the climate change regime, and influences the standard of due diligence in relation to the obligations of conduct it contains".¹²⁶ Whether or not such an application is appropriate in the context of the marine environment as it relates to ocean NETs under UNCLOS is uncertain.

Needless to say, due diligence obligations under UNCLOS may provide the law of the sea regime with the adaptability that it needs in order to regulate the continued increase in private conduct on and in the ocean. It has been said that due diligence obligations permit "international law to deal with non-state actors as if they were international legal persons or at least to integrate them into legal regimes", thereby closing accountability gaps, "and aims to prevent large-scale risks from materialising".¹²⁷ However, the variability and often vague content of specific due diligence

¹²² Scott, *Geoengineering and the Marine Environment*. In: Rayfuse (ed.) *Research Handbook on International Marine Environmental Law*, 2015, 463; Proelss, *Prinzipien des internationalen Umweltrechts*. In: Proelss (ed.) *Internationales Umweltrecht*, 2017, 84-96.

¹²³ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area*, Advisory Opinion, ITLOS Report 2011, 10 paras.132 & 135.

¹²⁴ H. Krieger and A. Peters, "Due Diligence and Structural Change in the International Legal Order". In: H. Krieger, A. Peters and L. Kreuzer (eds.) *Due Diligence in the International Legal Order*, 2020, pp. 374-376.

¹²⁵ See Preamble para. 6 and Arts. 3(1) and 4(1) UNFCCC (United Nations Framework Convention on Climate Change (9 May 1992, 1771 UNTS 107 (entered into force 21 March 1994))); see also Preamble and Arts. 2(2), 4(3), and 4(19) Paris Agreement (12 December 2015, C.N.92.2016. Treaties-XXVII.7.d (entered into force 4.11.2016)). See also L. Rajamani, "Due Diligence in International Climate Change Law". In: H. Krieger, A. Peters and L. Kreuzer (eds.) *Due Diligence in the International Legal Order*, 2020, pp. 165-166.

¹²⁶ L. Rajamani, "Due Diligence in International Climate Change Law". In: H. Krieger, A. Peters and L. Kreuzer (eds.) *Due Diligence in the International Legal Order*, 2020, pp. 175.

¹²⁷ H. Krieger and A. Peters, "Due Diligence and Structural Change in the International Legal Order". In: H. Krieger, A. Peters and L. Kreuzer (eds.) *Due Diligence in the International Legal Order*, 2020, pp. 387.

obligations may come at the cost of legal certainty. In particular, international law has proven that broad legal concepts provide more leeway – often at the expense of the environment – for States to interpret their respective obligations in line with their own national.