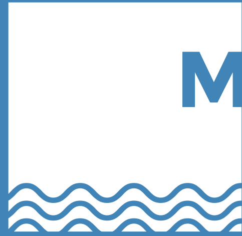
ISSN 2464-9724



Maritime Safety and Security Law Journal

2025
Issue 16

Maritime Safety
and Security Law Journal

Board of Editors

Gemma Andreone

*Institute for International Legal Studies,
National Research Council, Italy*

Giovanni Ardito

*Institute for International Legal Studies,
National Research Council, Italy*

Andrea Caligiuri

University of Macerata, Italy

Anna Petrig

University of Basel, Switzerland

Assistant Editors

Ludovica De Benedetti

University of Modena and Reggio Emilia,

Editorial Team

Elena Ardito

University of Macerata, Italy

Rachele Marconi

Sant'Anna School of Advanced Studies, Italy

Anne-Sophie Martin

*Institute of International Legal Studies,
National Research Council, Italy*

Maritime Safety and Security Law Journal

Advisory Board

Frida Armas Pfirter
ITLOS and Austral University, Argentina

Fenella Billing
University of Southern Denmark, Denmark

Ida Caracciolo
ITLOS
and University of Campania Luigi Vanvitelli, Italy

Giuseppe Cataldi
University of Naples L'Orientale, Italy

Yitong Chen
Ocean University of China, PRC

Aldo Chircop
Dalhousie University, Canada

Claudia Cinelli
University of Pisa, Italy

Michele Maria Comenale Pinto
Università di Sassari, Italy

Haritini Dipla
University of Athens, Greece

Mathias Forteau
University of Paris Ouest, Nanterre La Défense, France

Erik Franckx
Vrije University, Belgium

Christian Frier
University of Southern Denmark, Denmark

Philippe Gautier
ICJ
and Catholic University of Louvain, Belgium

Douglas Guilfoyle
UNSW Canberra, Australia

Victor Luis Gutierrez Castillo
University of Jaen, Spain

Tore Henriksen
University of Tromsø, Norway

Kamrul Hossain
University of Lapland, Finland

Mariko Kawano
Waseda University, Japan

Timo Koivurova
University of Lapland, Finland

Kiara Neri
University of Lyon 3, France

Alexander Proelß
University of Hamburg, Germany

Marta Chantal Ribeiro
University of Porto, Portugal

Natalino Ronzitti
LUISS Guido Carli University, Italy

Nathalie Ros
University of Tours, France

Valentina Rossi
IRISS, National Research Council, Italy

Karen Scott
University of Canterbury, New Zealand

Tullio Scovazzi
University of Milan-Bicocca, Italy

Maja Sersic
University of Zagreb, Croatia

Tullio Treves
State University of Milan, Italy

Seline Trevisanut
Utrecht University, Netherlands

Eva M. Vazquez Gomez
University of Cordoba, Spain

Roberto Virzo
University of Messina, Italy

Antonia Zervaki
University of Athens, Greece

Table of Contents

Zhonghua CHEN,
'Due Diligence Obligations Under UNCLOS: Navigating the Conduct- Result Dichotomy in the Context of Ocean Climate Change' 1

Ademuni ODEKE,
'The Houthi Attacks on Shipping and Maritime Security' 24

Adelaide Francesca Daniela LUMINARI,
'Law of the Sea and Climate Action: Rethinking Marine Geoengineering Governance' 49

CURRENT DEVELOPMENT

Elisa RUOZZI

Comment to Directive (EU) 959/2023 establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 1814/2015 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas Emission Trading System i

Abdulrazaq O. ABDULKADIR, Taofeeq A. ABDULRAHEEM, Deborah O. AYODELE,

Exploration of Blue Economy: a Prognosis of its Sustainability in the Wave of Maritime Rascality vii

Maritime Safety
and Security Law Journal

Due Diligence Obligations Under UNCLOS: Navigating the Conduct-Result Dichotomy in the Context of Ocean Climate Change

*Zhonghua CHEN**

Abstract

Under the prevailing consensus that Articles 192 and 194(1)(2) of the United Nations Convention on the Law of the Sea (UNCLOS) constitute due diligence obligations as obligations of conduct, small island states have advocated that in the context of climate change, these provisions should go beyond the due diligence obligations and encompass obligations of result. Some even argue that climate change has transformed the nature of these provisions into obligations of result. This paper, drawing upon the reasoning in the recent advisory opinion and analysing the specific rationales advanced by small island states, maintains that neither the concept of due diligence nor the aforementioned provisions of UNCLOS can be interpreted as containing or transforming into obligations of result. The study emphasizes the critical distinction between the 'standard of compliance' for due diligence obligations and independent obligations of result. It further demonstrates that subsequent procedural obligations under Part XII of UNCLOS, along with other rules such as climate targets established by the Paris Agreement, could contribute to clarifying the 'stringent standard' of due diligence in climate change contexts. Finally, this paper focuses on achieving systemic coordination between procedural obligations and due diligence requirements, aiming to clarify existing controversies in this field.

Key Words: due diligence, obligations of result, COSIS Advisory Opinion, climate change, UNCLOS

First published online: 14 July 2025

1. Introduction

On 21 May 2024, the International Tribunal for the Law of the Sea (ITLOS) delivered a landmark advisory opinion in response to the request submitted by the Commission of Small Island States on Climate Change and International Law (COSIS), interpreting the states' obligations under the UNCLOS in addressing ocean climate change impacts.[1] This seminal opinion marks the first instance in which an international judicial body has authoritatively delineated the legal concept of 'due diligence' obligations, as enshrined in Articles 192 and 194(1)-(2) of UNCLOS, within the context of

* PhD Candidate, Department of European, Public and International Law – Faculty of Law and Criminology – Ghent University, Belgium.

1 COSIS, *Request for an Advisory Opinion Submitted by The Commission of Small Island States on Climate Change and International Law* (ITLOS Case 31, 21 May 2024).

transboundary climate harms affecting oceanic environment.[2]

While this identification does not come as a surprise, participating states in the proceedings have not reached consensus across all issues concerning this ambiguous concept. A particularly salient point of contention revolves around the nature of obligations under Articles 192 and 194 of UNCLOS.[3] This divergence is epitomized in the conflicting interpretations of whether Articles 192 and 194 impose obligations of conduct, obligations of result, or a hybrid category - a question deliberately left unresolved in the final advisory opinion.[4] Specifically, while there is broad recognition among states that due diligence constitutes an obligation of conduct, certain nations contend that the provisions should concomitantly incorporate obligations of result - or at minimum encompass elements thereof - in the context of escalating climate change challenges.[5] Faced with this doctrinal impasse, the Tribunal articulated its response as follows:

'The Tribunal observes that the obligation under Article 194, paragraph 1, of the Convention, and, in fact, obligations under some other provisions of Part XII, including Article 194, paragraph 2, are formulated in such a way as to prescribe *not only the required conduct of states but also the intended objective or result of such conduct.* Whether this obligation is that of conduct or of result depends on *whether states are required to achieve the intended objective or result*, i.e., prevention, reduction and control of marine pollution. This, in turn, depends essentially upon *the text of the relevant provision and the overall circumstances envisaged by it*. As stated above (see paras. 232 to 236), the Tribunal considers that what is required under Article 194, paragraph 1, is *not to achieve the prevention, reduction and control of marine pollution but to take all necessary measures* to that end'.[6]

The Tribunal's above interpretation leaves at least the following unresolved issues: While acknowledging the persistent controversy over whether due diligence should be strictly equated with obligations of conduct,[7] the Tribunal merely relied on prior jurisprudence to directly conclude that

---

2 ibid 441.

3 On 11 September 2023, Judge Kittichaisaree posed a question concerning the nature of the obligations to the COSIS, which was responded by the COSIS on 24 September 2023. See COSIS, *Response to Judge Kittichaisaree's Question* (ITLOS case 31, 24 September 2023).

4 *COSIS Advisory Opinion* (n 1) 237.

5 ibid.

6 ibid 238.

7 International Law Commission (ILC), 'Report of the International Law Commission on the Work of its 75th Session' (29 April-31 May and 1 July-2August 2024) UN Doc A/79/10, Annex 2, 6.

Articles 192 and 194 of UNCLOS constitute obligations of conduct.[8] However, it failed to elucidate questions raised by certain states during the proceedings: whether the severity of climate change could alter the nature of due diligence; as well as whether the two provisions might simultaneously encompass both obligations of conduct and that of result.[9] In addition, the Tribunal failed to directly address a central argument advanced by COSIS: Article 194(1) of UNCLOS imposes a direct and immediate obligation on states to adopt 'all measures objectively necessary' to achieve its intended results - a standard that fundamentally goes beyond the traditional scope of due diligence obligations.[10] While the Netherlands, Australia, and other states nominally contested this interpretation, their responses offered only cursory rebuttals devoid of substantive engagement with its legal premises.[11] Finally, as the Tribunal stated, determining the nature of an obligation requires consideration of the 'overall circumstances'.[12] While it clarified that due diligence provisions do not obligate states to achieve the specific outcomes of preventing, controlling, and reducing marine pollution, it left open whether other 'intended results' linked to climate change - such as the Paris Agreement's 1.5°C target - might impose obligations of result on states.[13]

These lacunae prompted Judge Kittichaisaree, in his declaration, to elaborate on this issue while casting doubt on the utility of the dichotomy itself.[14] Furthermore, the Tribunal's jurisprudential silence on these issues has precipitated their resurgence as pivotal points of contention in the pending climate change advisory opinion proceedings before the International Court of Justice (ICJ).[15] Some states have even argued that the gravity of climate change justifies converting obligations of conduct

8 *COSIS Advisory Opinion* (n 1) 237.

9 Democratic Republic of Timor-Leste, *Response of the Democratic Republic of Timor-Leste to COSIS's Reply to Judge Kittichaisaree's Question* (ITLOS case 31, 4 October 2023, 7).

10 ibid 10.

11 Australia, *Australian Comments on the Further Responses of COSIS and IUCN* (ITLOS case 31, 2 October 2023, 5); Kingdom of the Netherlands, *Written Comments of the Kingdom of the Netherlands on the Written Responses by COSIS and IUCN to the Question asked by Judge Kittichaisaree* (ITLOS case 31, 16 June 2023, 1); Republic of Latvia, *Comments of the Republic of Latvia on the Written Response by COSIS and IUCN* (ITLOS case 31, 16 June 2023, 7).

12 *COSIS Advisory Opinion* (n 1) 238.

13 United Nation, Paris Agreement (adopted 12 December 2015, entered into force 4 November 2016) 3156 UNTS 79 art 2; ibid 137, 140.

14 *COSIS Advisory Opinion* (Declaration of Judge Kittichaisaree) (n 1) 22.

15 ICJ, 'The General Assembly of the United Nations requests an advisory opinion from the Court on the obligations of States in respect of climate change', Press release 2023/20 <www.icj-cij.org/sites/default/files/case-related/187/187-20230419-PRE-01-00-EN.pdf> accessed 4 March 2025.

into obligations of result,[16] which is contested by other members of the international community.[17] At the same time, the International Law Commission (ILC), during its 2024 session, decided to include 'due diligence in international law' within its long-term program of work.[18] The commission notably observed that 'the legal character, scope and content of the duty of due diligence at international law is not well defined'.[19] This recognition underscores the persistent doctrinal ambiguity surrounding the nature of due diligence - an issue that continues to generate both theoretical contention and practical divergences in state practice.

This article examines whether, despite the widespread recognition of due diligence as a 'variable concept' and its general classification as an obligation of conduct, it can also inherently entail obligations of result.[20] Should the answer be in the negative, the article proceeds to examine whether Articles 192 and 194(1)–(2) of UNCLOS nevertheless support a normative framework capable of accommodating both elements of due diligence and obligations of result. If this question is likewise answered in the negative, the article considers the significance of the arguments advanced by COSIS-particularly the invocation of Article 194's requirement to take "all necessary measures"-in shaping the scope of due diligence obligations incumbent upon parties. To address these issues, the article will first analyse the relationship between obligations of result, due diligence, and 'due diligence' provisions, contextualized within the climate-specific challenges and the unresolved state arguments identified earlier that the Tribunal declined to engage with. Building on these findings, the analysis will then examine how the nature of due diligence shapes its standards of compliance.

2. Due Diligence vs. Obligations of Result: A Doctrinal Analysis under UNCLOS

In terms of Article 192 and Article 194(1)(2) of UNCLOS, three potential doctrinal interpretations emerge: (a) Due diligence obligations under these provisions may inherently incorporate both

16 Democratic Republic of the Congo, *Written Statement of the Democratic Republic of the Congo* (ICJ case concerning Obligations of States in respect of Climate Change, 173).

17 COSIS *Advisory Opinion, Minutes of the Public Sittings Held from 11 to 25 September 2023*, (ITLOS case 31, 15 February 2024, 441).

18 ILC Report (n 7) 423.

19 ibid Annex 2, 6.

20 ITLOS, *Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area* (ITLOS case 17, Advisory Opinion, 1 February 2011) ITLOS Reports 2011, 43 (*Area Advisory Opinion*) 117; International Law Association (ILA), 'ILA Study Group on Due Diligence in International Law, First Report' (7 March 2014) 17.

obligations of conduct and obligations of result; (b) Due diligence obligations are strictly obligations of conduct, while Articles 192 and 194(1)(2) of UNCLOS simultaneously impose obligations of result for states; (c) The obligations under these provisions, when framed as due diligence, remain exclusively obligations of conduct, with no independent obligations of result arising from them. Prior to this analysis, it is imperative to clarify three basic legal concepts: 'due diligence', the 'conduct-result dichotomy', and the 'intended objective or result' as frequently mentioned in the *COSIS Advisory Opinion*.

2.1 Defining Key Legal Concepts

2.1.1Due Diligence

Originally emerging from 19th-century state practice and arbitral awards in the context of neutrality law and the protection of aliens and their property,[21] the doctrine of due diligence has been intensively applied in contemporary international environmental law.[22] In the 2011 advisory opinion concerning *responsibilities and obligations of states with respect to activities in the Area* (Area advisory opinion), ITLOS formally incorporated the concept of due diligence into the normative framework of the law of the sea. [23] Through subsequent advisory proceedings, respectively the 2015 Sub-Regional Fisheries Commission advisory opinion (SRFC advisory opinion) and the *COSIS advisory opinion*, the Tribunal has progressively substantiated and clarified its concept.[24] However, as the Tribunal admitted, 'the content of due diligence obligations may not easily be described in precise terms. Among the factors that make such a description difficult is the fact that due diligence is a variable concept.'[25] In general, according to the view of the ILC, it has been understood as 'a duty or standard of care that should be applied to a state's actions on its territory or activities subject to its jurisdiction or control, which harm the rights and interests of other states.'[26]

International judicial bodies have amassed substantial jurisprudence that confirms the nature of

21 *Alabama claims of the United States of America against Great Britain* (1872), 29 RIAA 129; *Frederick Wipperman v. United States of America Venezuela* (1890) The United States and Venezuela Commission 137, 3 Moore, History and Digest 3041.

22 Rumiana Yotova, 'The Principles of Due Diligence and Prevention in International Environmental Law' (2016) 75 The Cambridge Law Journal 445, 446; Jorge E Viñuales, 'Due Diligence in International Environmental Law: A Fine-Grained Cartography' in Heike Krieger, Anne Peters and Leonhard Kreuzer (eds), *Due Diligence in the International Legal Order* (1st ed, Oxford University Press Oxford 2020).

23 ITLOS *Area Advisory Opinion* (n 20) 110.

24 SRFC, *Request for Advisory Opinion submitted by the Sub-Regional Fisheries Commission* (Advisory Opinion, 2 April 2015) ITLOS Reports 2015, 45.

25 ITLOS *Area Advisory Opinion* (n 20) 117.

26 ILC Report (n 7) 155.

due diligence as an obligation of conduct: In the *Pulp Mills Case*, the ICJ illustrates that the obligation to adopt regulatory or administrative measures and to enforce them is an obligation of conduct, both parties are therefore called upon to exercise due diligence.[27] The Tribunal in the *Area advisory opinion* makes it clear that 'the notions of obligations of due diligence and obligations of conduct are connected.' [28]In the SRFC advisory opinion, the Tribunal further indicates that as an obligation 'of conduct' this is a 'due diligence obligation', not an obligation 'of result'.[29] The Tribunals' reasoning in the aforementioned cases not only unequivocally affirms that due diligence constitutes an obligation of conduct under international law, but also clarifies that such obligations cannot inherently subsume obligations of result.

2.1.2 The conduct-result dichotomy

This dichotomy derives from the civil law tradition;[30] it was Roberto Ago, the special rapporteur of the ILC, who sought to introduce this classification into the state responsibility regime.[31] According to the second report on state responsibility released by the ILC, the distinction is 'of fundamental importance in determining how the breach of an international obligation is committed in any particular instance.'[32] The report further points out that the fundamental distinction between these categories of obligations lies in whether it leaves room for states to determine the means to implement the obligation: obligations of conduct prescribe with specificity the means to be employed by States in their implementation, while obligations of result establish exclusively the required outcomes, thereby granting states discretionary autonomy in selecting appropriate implementation methods.[33]

However, this distinction was not incorporated into the final version of the ILC articles on State Responsibility, as states and scholars criticized the dichotomy for being overly rigid and imprecise.[34] More significantly, the ILC deliberately refrained from specifying the content of primary rules under

27 *Case Concerning Pulp Mills on the River Uruguay (Argentina v Uruguay)* [2010] ICJ Rep 14, para 187.

28 ITLOS *Area Advisory Opinion* (n 20) 111.

29 *SRFC Advisory Opinion* (n 24) 129.

30 Pierre-Marie Dupuy, 'Reviewing the Difficulties of Codification: On Ago's Classification of Obligations of Means and Obligations of Result in Relation to State Responsibility' (1999) 10 European Journal of International Law 371.

31 ibid.

32 ILC, 'Second Report on State responsibility, by Mr. James Crawford, Special Rapporteur' (17 March, 1 and 30 April, 19 July 1999) UN Doc A/CN.4/498 and Add.1-4, 20.

33 ibid.

34 ibid Dupuy (n 30).

international law;[35] it emphasized that the scope and content of any international obligation must be determined through interpretation of the relevant international instrument.[36] It demonstrates that in theory, an international obligation (such as Articles 192 and 194 of UNCLOS) might concomitantly encompass obligations of conduct and obligations of result, with these two categories not being mutually exclusive.[37] The precise normative character of such obligations, however, necessitates a context-specific analysis grounded in the factual and legal particularities of each case.

It is also necessary to mention that the comprehensiveness of this dichotomy has also been called into question. The ILC indicates that the obligations of prevention exist outside this dichotomy,[38] while the case concerning the *Gabčíkovo-Nagymaros Project* mentioned the concept of 'obligations of performance'.[39] Additionally, scholars have proposed more nuanced categorizations of international obligations.[40] However, given that COSIS specifically asserts the relationship between the specific provisions of UNCLOS and obligations of result, the significance of such dichotomies will not be a primary focus in this discussion.

2.1.3 Intended objective or result

This term was explicitly invoked in the *COSIS Advisory Opinion*, where the Tribunal observed that the 'intended objective or result' envisaged under Articles 192 and 194 of UNCLOS is the 'prevention, reduction, and control of marine pollution,'[41] to be achieved through 'taking all necessary measures' - that is, by discharging due diligence obligations.[42] Simultaneously, the Tribunal underscored that Article 194 does not guarantee the realization of such outcomes, particularly in light of the cumulative impacts of climate change.[43] The Tribunal's reasoning crystallizes a critical

35 Rüdiger Wolfrum, 'Obligation of Result Versus Obligation of Conduct: Some Thoughts About the Implementation of International Obligations' in Mahnoush H. Arsanjani and others (eds), *Looking to the Future: Essays on International Law in Honor of W. Michael Reisman* (Martinus Nijhoff Publishers 2011) 364.

36 James Crawford, *The International Law Commission's Articles on State Responsibility: Introduction, Text and Commentaries* (Transferred to digital printing, Cambridge University Press 2007) 124.

37 ILC Second Report (n 32) 27.

38 ibid.

39 *Case Gabčíkovo-Nagymaros Project (Hungary v. Slovakia)* (Judgement) [1997] ICJ Rep 77, para 135.

40 For example, Judge Wolfrum argued that the following types of international obligations should be distinguished: (1) obligations of result; (2) obligations of conduct; (3) goal-oriented obligations; (4) obligations which, in fact, address natural and juridical persons and, finally, (5) international obligations of conduct as well as of result. Rüdiger Wolfrum (n 35) 368.

41 *COSIS Advisory Opinion* (n 1) 232.

42 ibid 234.

43 ibid 199.

conclusions: The 'intended result' remains intricately linked to due diligence obligations, serving as an integral component of obligations of conduct that inform the required standard of due diligence.[44] Therefore, the 'intended result' under UNCLOS is conceptually distinct from 'obligations of result' in international law, meaning states parties do not incur responsibility solely for failing to achieve the former. As the ICJ has unequivocally affirmed, 'a state does not incur responsibility simply because the desired result is not achieved.'[45] In the context of climate change, distinguishing between 'intended results' and 'obligations of result' holds profound significance:

Firstly, given the cumulative and irreversible impacts of anthropogenic greenhouse gas emissions on marine ecosystems, climate-caused marine pollution cannot be immediately halted.[46] Unlike traditional transboundary harm, climate change implicates all states as both contributors to and victims of marine environmental degradation.[47] If the two concepts are conflated, then in the short term, if marine pollution caused by climate change is neither reduced nor controlled, all states parties would breach their obligations under Articles 192 and 194 of UNCLOS; Secondly, the *COSIS Advisory Opinion* explicitly acknowledges that Article 194 of the UNCLOS incorporates elements of the principle of common but differentiated responsibilities (CBDR), which mandates differentiated obligations for developed and developing states.[48] Equating "intended results" with "obligations of result" would render the CBDR principle inapplicable, since obligations of result focus solely on the ultimate outcome of an obligation, whereas the CBDR principle emphasizes state conduct - such as differing developmental needs, technological capacities among states, and actions like technology transfer.[49] Such an interpretation would disproportionately burden developing states, contravening the equity-centered ethos of CBDR.

However, this merely demonstrates that Articles 192 and 194 of UNCLOS are not exclusively obligations of result, but it does not address COSIS's core argument: that both provisions simultaneously encompass obligations of conduct and obligations of result. A critical examination of

---

44 Machiko Kanetake and Cedric Ryngaert, 'Due Diligence and Corporate Liability of the Defence Industry: Arms Exports, End Use and Corporate Responsibility' (Flemish Peace Institute 2023) 9.

45 *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)* (Merits) [2007] ICJ Rep 221.

46 *COSIS Advisory Opinion* (n 1) 199.

47 Christopher Campbell-Duruflé, 'The Significant Transboundary Harm Prevention Rule and Climate Change: One-Size-Fits-All or One-Size-Fits-None?' in Benoit Mayer and Alexander Zahar (eds), Debating Climate Law (1st edn, Cambridge University Press 2021) 31.

48 *COSIS Advisory Opinion* (n 1) 229.

49 Response of the Democratic Republic of Timor-Leste to COSIS's Reply to Judge Kittichaisaree's Question <https://itlos.org/fileadmin/itlos/documents/cases/31/Oral_proceedings/questions/Comments_Timor-Leste.pdf>, accessed 9 March 2025, 5.

COSIS's specific rationale for this categorization is therefore necessary.

2.2 Examining COSIS's Core Arguments

The aforementioned view of COSIS primarily based on three grounds: First, given overwhelming scientific evidence demonstrating that current global mitigation efforts remain perilously inadequate to bridge the gap toward climate objectives, 'the traditional presumption of state compliance with international law is being decisively upended in the climate change context.'[50] Second, the obligation under Article 194 of UNCLOS to 'take all measures necessary to ensure' should be interpreted as an obligation entails but also goes beyond due diligence obligations, according to the relevant case law.[51] Finally, the 1.5°C target under the Paris Agreement sets out an obligation of result for states.[52] It is necessary to scrutinize the validity of these three arguments individually.

2.2.1 The existential gravity of climate change

States advocating this position are necessarily premised on the assumption that obligations of result are inherently more stringent than obligations of conduct.[53] However, this foundational premise is far from solid.

Specifically, the case *Certain Activities Carried Out by Nicaragua in the Border Area* (Nicaragua Case) demonstrates that a state may still be held in breach of its obligations of conduct even if the anticipated results have been formally achieved.[54] Notwithstanding the absence of real environmental harm, Costa Rica incurred international responsibility for violating its obligation of conduct by failing to conduct a prior environmental impact assessment (ELA).[55] Furthermore, in the case concerning the *Gabčíkovo-Nagymaros Project*, the ICJ emphasized that 'vigilance and prevention are required on account of the often irreversible character of damage to the environment and of the limitations inherent in the very mechanism of reparation of this type of damage (transboundary harm).'[56] Although the loss and damage caused by climate change differs significantly from traditional transboundary harm

50 *Written Statement of Congo* (n 16) 173.

51 *COSIS's Response* (n 3).

52 *Written Statement of Congo* (n 16) 132.

53 Alice Ollino, 'The Nature of Due Diligence Obligations' in Alice Ollino (ed), *Due Diligence Obligations in International Law* (Cambridge University Press 2022) 87; James Crawford, 'Revising the Draft Articles on State Responsibility' (1999) 10 European Journal of International Law 435, 441.

54 *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua) and Construction of a Road in Costa Rica along the San Juan River (Nicaragua v. Costa Rica)* (Merits) [2015] ICJ Rep 723.

55 ibid.

56 *Gabčíkovo-Nagymaros Project (Hungary v. Slovakia)* (Judgement) [1997] ICJ Rep 7, 140.

in terms of complexity of causation, global scope, and temporal scale, the Tribunal in the *COSIS advisory opinion* clarified that such distinctions do not preclude the application of obligations related to transboundary harm in the context of climate change.[57] Consequently, the ICJ's aforementioned position applies equally to climate change: regulating conduct must take precedence over the pursuit of results.[58]

In addition, within the regime of climate change, 'obligations of conduct invite more complex considerations at the stage of assessing compliance, but it may also facilitate an early review of compliance before the expiration of the period of commitment.'[59] The evolution of international climate governance from the Kyoto Protocol to the Paris Agreement underscores a critical lesson: while the Kyoto Protocol imposed 'Quantified Emission Limitation and Reduction Commitments' (QELRCs) on Annex I developed countries[60] - obligations widely characterized as obligations of result[61] - its efficacy was fundamentally constrained by the non-participation of key states like Canada, who avoided breach of the obligation by withdrawing from the Protocol before the expiration of the commitment period .[62] This limitation starkly revealed the inherent fragility of a rigid, result-centric framework in addressing the dynamic challenges of climate change.[63] In comparison, according to the Paris Agreement, the national commitments are not negotiated and included in the instrument, as in the Kyoto Protocol, but are to be determined unilaterally by each state.[64] It requires each party to 'pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.'[65] Thus, a state's nationally determined contribution (NDC) creates an obligation of conduct with regard to the target conveyed in NDCs.[66] Based on the outcome of the first Global

57 *COSIS Advisory Opinion* (n 1) 252.

58 Malgosia Fitzmaurice and others, *Research Handbook on International Environmental Law* (Edward Elgar Publishing 2021) 27.

59 Benoit Mayer, 'Obligations of Conduct in the International Law on Climate Change: A Defence' (2018) 27 Review of European, Comparative & International Environmental Law 130.

60 Kyoto Protocol to the United Nations Framework Convention on Climate Change (adopted 11 December 1997, entered into force 16 February 2005) 2303 UNTS 162 art 3.

61 Markus Vordermayer-Riemer, *Non-Regression in International Environmental Law: Human Rights Doctrine and the Promises of Comparative International Law* (Intersentia 2020) 287.

62 Benoit Mayer, *The International Law on Climate Change* (1st ed, Cambridge University Press 2018) 39.

63 Amanda M Rosen, 'The Wrong Solution at the Right Time: The Failure of the Kyoto Protocol on Climate Change' (2015) 43 Politics & Policy 30, 41; Bruce Pardy, 'The Kyoto Protocol: Bad News for the Global Environment' (2004) Journal of Environmental Law and Practice, Vol 14, p 27.

64 Robert Falkner, 'The Paris Agreement and the New Logic of International Climate Politics' (2016) 92 International Affairs 1107, III5.

65 Paris Agreement (n 13) art 4(2).

66 Mayer (n 62) 48.

Stocktake in 2023, all parties have submitted their NDCs.[67] This obligation of conduct effectively addresses the shortcomings of the Kyoto Protocol's result-based obligations and has encouraged broad participation from countries around the world. Although the Stocktake also pointed out that the current global greenhouse gas emissions trajectory remains inconsistent with the temperature control goals of the Paris Agreement,[68] this reflects issues related to the concrete and in-depth implementation of conduct-based obligations, rather than calling into question the legitimacy or rationale of the nature of the obligations.[69]

This principle is equally applicable in the maritime context: Among 148 new or updated NDCs recorded in 2024, 56% incorporate coastal and marine nature-based solutions into mitigation or adaptation measures.[70] As articulated in the International Law Association (ILA) Declaration of Legal Principles Relating to Climate Change, states' obligations under the law of the sea must be coordinated with climate change obligations in a 'mutually supportive manner'.[71] Consequently, interpreting states' obligations as obligations of result in light of the severity of climate change would fundamentally undermine this coherence. In conclusion, the proposition that the gravity of climate risks could transmute due diligence obligations into obligations of result is fundamentally untenable.

2.2.2 The interpretation of 'necessary to ensure' in Article 194 of UNCLOS

COSIS posed an interesting argument: while the Tribunal in the *Area Advisory Opinion* conclusively characterized the 'responsibility to ensure' under Article 139(1) of UNCLOS as an obligation of conduct, the phrase 'necessary to ensure' in Article 194(2) warrants a divergent interpretation.[72] This terminology should align with the ICJ's jurisprudence interpreting analogous formulations such as 'all measures necessary to ensure' in the case concerning *the interpretation of the judgement between Mexico and the USA* (Avena Interpretation Judgment) and 'all steps to ensure' in the case concerning *jurisdictional immunities of the state between Germany and Italy* (Jurisdictional

---

67 COP of the Paris Agreement 'Outcome of the first global stocktake' (13 December 2023) UN Doc FCCC/PA/CMA/2023/L.17, 19.

68 ibid 24.

69 Frauke Röser and others, 'Ambition in the Making: Analysing the Preparation and Implementation Process of the Nationally Determined Contributions under the Paris Agreement' (2020) 20 Climate Policy 415, 417; W Pieter Pauw and Richard JT and Klein, 'Beyond Ambition: Increasing the Transparency, Coherence and Implementability of Nationally Determined Contributions' (2020) 20 Climate Policy 405, 408; Kilian Raiser and others, 'Is the Paris Agreement Effective? A Systematic Map of the Evidence' (2020) 15 Environmental Research Letters 083006, 2.

70 Report of the Secretary-General, 'Oceans and the law of the sea' (2024) UN Doc A/79/340, 37.

71 ILA, 'Declaration of Legal Principles Relating to Climate Change' (2014) Resolution 2/2014, draft art 10.

72 *COSIS's Response* (n 3).

Immunities Judgment).[73] While some may contend that the judicial interpretations in these cases pertain to judgments and orders rather than treaty provisions,[74] precedents exist wherein tribunals have construed a state's treaty-based obligation to 'ensure' as an obligation of result. For instance, in the *Dispute Concerning Access to Information Under Article 9 of the OSPAR Convention between Ireland and the United Kingdom* (OSPAR Arbitration), the arbitral tribunal concluded that Article 9(1) of the OSPAR Convention - which requires states parties to 'ensure that their competent authorities are required to make information available to any natural or legal person' - constitutes an obligation of result, thereby mandating the achievement of specific accessibility.[75]

Divergent interpretations of the term 'ensure' in different cases and treaties represent a legitimate and inevitable consequence of international legal practice, as articulated by the ITLOS in the *MOX Plant Case*:

'The application of international law rules on interpretation of treaties to identical or similar provisions of different treaties may not yield the same results, having regard to, *inter alia*, differences in the respective contexts, objects and purposes, subsequent practice of parties and *travaux préparatoires*.'[76]

Nevertheless, the ICJ in the two judgments invoked by COSIS did not explicitly construe the term 'ensure' as imposing obligations of result. In the *Avena Interpretation Judgment*, the court determined that the United States violated its prior judgment due to specific actions taken against Mr. Medellín, rather than categorizing the obligation to 'ensure' as one of result.[77] In the *Jurisdictional Immunities Judgment*, ICJ interpreted the phrase "all steps to ensure" as imposing an obligation of result in this case because Italy had committed an internationally wrongful act.[78] The court reasoned that, under

73 *Request for Interpretation of the Judgment of 31 March 2004 in the Case concerning Avena and Other Mexican Nationals (Mexico v. United States of America)* (Merits) [1996] ICJ Rep 3; *Jurisdictional Immunities of the State (Germany v. Italy: Greece intervening)* (Merits) [2012] ICJ Rep 137.

74 In the *Avena Interpretation Judgment*, it is the provisional measures which ordered that the United States of America 'shall take all measures necessary to ensure' that certain individuals are not executed pending judgment on the request for interpretation is requested to be interpreted; in the *Jurisdictional Immunities Judgment*, Germany asked the Court to order Italy 'to take, by means of its own choosing, any and all steps to ensure' that certain Italian judicial decisions infringing Germany's sovereign immunity cease to have effect.

75 Tribunal constituted pursuant to the OSPAR Convention *Dispute Concerning Access to Information Under Article 9 of the OSPAR Convention (Ireland v United Kingdom)* (2003) 42 ILM 1118, 137.

76 *The MOX Plant Case (Ireland v. United Kingdom)* (Provisional Measures, Order of 3 December 2001) ITLOS Reports 2001, 51.

77 *Avena Interpretation Judgment* (n 73) 52.

78 *Jurisdictional Immunities Judgment* (n 73) 137.

the rules of state responsibility, Italy was obligated to achieve the specific outcome of ceasing such wrongful conduct.[79] However, climate change does not constitute an internationally wrongful act under current international law.[80] Therefore, the court's interpretation in this case cannot be directly applied to climate-related obligations.[81]

Regarding the *OSPAR Arbitration*, the arbitral tribunal's reasoning hinges on the deliberate use of the term 'to ensure' throughout the OSPAR Convention,[82] which the drafters intentionally employed to highlight the stringency of the obligations imposed.[83] Specifically, Article 9(1) of the OSPAR Convention requires states parties to 'ensure' public access to environmental information - a formulation the Tribunal interpreted as mandating the actual realization of accessibility outcomes rather than mere procedural compliance.[84] The Tribunal concluded that the United Kingdom's establishment of domestic legal mechanisms alone failed to satisfy this standard.[85] The 'intended result' under Article 9 of the OSPAR Convention - namely, information disclosure - constitutes a clear and concrete objective. The achievement of this result holds greater significance than the methods of disclosure and aligns more closely with the spirit of the OSPAR Convention's preamble, which prioritizes the protection of the marine environment in the Northeast Atlantic.[86] In contrast, the 'intended result' under Articles 192 and 194 of UNCLOS constitutes an abstract and indeterminate concept. This interpretive framework cannot be mechanically transposed from obligations of information disclosure to obligations concerning climate change mitigation and the prevention, reduction, and control of marine environmental degradation. As emphasized by the ILC in its report on the identification of customary international law, "it is of course important to consider instances of conduct that are in fact comparable, that is, where the same or similar issues have arisen so that such instances could indeed constitute reliable guides."[87] Clearly, the *OSPAR Arbitration* does not

79 ibid.

80 El Roam says, 'The Point of No Return: The Inadequacy of the Law of State Responsibility in Finding International Responsiblity for the Adverse Effects of Climate Change' (*International Law Blog*, 2 November 2022) <https://internationallaw.blog/2022/11/02/the-point-of-no-return-the-inadequacy-of-the-law-of-state-responsibility-in-finding-international-responsiblity-for-the-adverse-effects-of-climate-change/> accessed 21 March 2025.

81 *Jurisdictional Immunities Judgment* (n 73) 137.

82 *OSPAR Arbitration* (n 75) 131.

83 ibid 133.

84 ibid 137.

85 ibid 135.

86 Convention for the protection of the marine environment of the North-East Atlantic (adopted 22 September 1992, entered into force 3 January 2006) 2354 UNTS 67 (OSPAR Convention) preamble.

87 ILC, 'Report of the International Law Commission on the Work of its 68th Session' (2 May-10 June and 4 July-12August 2016) UN Doc A/71/10, 95.

constitute a comparable instance.

Nevertheless, a critical conclusion emphasized in the *OSPAR Arbitration* holds paramount significance: the phrase 'to ensure' is connected with the standard of compliance for an international obligation.[88] In the COSIS *Advisory Opinion*, the Tribunal admits that the exigencies of climate change do impose stringent due diligence requirements on states under UNCLOS.[89] It is clear that the term 'all measures necessary to ensure' stipulated in Article 194 of UNCLOS concerns the standard of due diligence. [90]

2.2.3 The role of the temperature target under the Paris Agreement

COSIS further points out that Article 194 of UNCLOS mandates states to adopt measures aligned with the best available scientific evidence and international standards, effectively establishing the 1.5°C target under the Paris Agreement as a minimum baseline.[91] Consequently, COSIS concludes that this formulation demonstrates Articles 192 and 194's incorporation of obligations of result.[92] However, this conclusion stems from a jurisprudential fallacy - COSIS erroneously conflates the 'intended results' inherent to due diligence obligations with obligations of result.

Other rules of international law, especially the Paris Agreement, are relevant in interpreting and applying the UNCLOS with respect to ocean climate change issues.[93] As the Tribunal clearly stated, 'relevant international rules and standards are reference points for assessing necessary measures.'[94] COSIS posited the Paris Agreement's 1.5°C climate target as the minimum benchmark for states to fulfil the 'necessary measures' requirement under Article 194 of UNCLOS. However, the Tribunal declined to directly address this linkage, instead emphasizing that the compliance with obligations under the Paris Agreement does not per se satisfy the obligations incumbent on states parties under Article 194 of UNCLOS.[95]

88 *OSPAR Arbitration* (n 75) 135.

89 *COSIS Advisory Opinion* (n 1) 240.

90 Stephen Fietta, Jiries Saadeh and Laura Rees-Evans, 'The South China Sea Award: A Milestone for International Environmental Law, the Duty of Due Diligence and the Litigation of Maritime Environmental Disputes' (2016) 29 Georgetown Environmental Law Review 711, 732.

91 *COSIS's Response* (n 3); Paris Agreement (n 13) art 2.

92 ibid.

93 *COSIS Advisory Opinion* (n 1) 222.

94 ibid 214.

95 ibid 223.

Even if the COSIS's arguments hold merit, it cannot substantiate the conclusion that 'Article 194 of UNCLOS contains obligations of result.' The 1.5°C temperature target under the Paris Agreement itself cannot be construed as an obligation of result; rather, it also constitutes an 'intended result' that states parties collectively strive to achieve through coordinated action. Crucially, as the ICJ articulated in the *Application of the Convention on the Prevention and Punishment of the Crime of Genocide*, in terms of the obligations requiring collective action, since no single state possesses the capacity to unilaterally achieve objectives dependent on multilateral cooperation, the compliance is assessed based on the reasonableness of a state's efforts rather than the ultimate prevention of the harm itself.[96] Furthermore, the NDCs submitted by states under the Paris Agreement vary widely in form and substance: some adopt quantitative metrics,[97] while others rely on qualitative goals.[98] Certain commitments are conditional,[99] whereas others are unconditional. Given this difference, even if obligations of result were hypothetically imposed, their enforcement would prove impracticable due to the lack of uniform, verifiable benchmarks across diverse national contexts. [100]

In conclusion, whether 'intended results' or 'external results' stipulated in other rules of international law, their function remains uniform: to assist in clarifying the standards of due diligence compliance for states, particularly in operationalizing the 'strength standard' by specifying its substantive requirements. The Paris Agreement's 1.5°C climate target cannot be construed as an obligation of result, nor does it impose an additional obligation of result under Articles 192 and 194 of UNCLOS.

3. Operationalizing Due Diligence: Procedural Obligations and Compliance Standards

As discussed, all the aforementioned elements collectively serve to inform and refine the standards of due diligence within UNCLOS. It is thus imperative to clarify the standards of due diligence enshrined in Articles 192 and 194 of UNCLOS.

96 *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v Serbia and Montenegro)* [2007] ICJ Rep 43, 430.

97 United States' Intended Nationally Determined Contribution (31 March 2015) <www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx> accessed 20 January 2017.

98 India's Intended Nationally Determined Contribution (1 October 2015) <www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx> accessed 20 January 2017.

99 ibid.

100 *Obligations of States in respect of Climate Change* (Annex ZA) 94.

3.1 'Pure conduct obligations' and 'procedural obligations'

The *COSIS Advisory* Opinion referenced a somewhat unusual concept termed 'pure conduct obligations,' a notion raised by Mozambique during the oral proceedings of this case.[101] Mozambique defined this concept as equivalent to 'best efforts' — the standard of due diligence fulfillment under general international law.[102] Mozambique further argued that the compliance standard under Article 194 of UNCLOS must exceed that of 'pure conduct obligations.'[103] The Tribunal subsequently addressed only two points: the standard of due diligence needs to be stringent and the close connection between due diligence and the precautionary approach.[104]

The Tribunal referenced this concept in the context of its final opinion and did not explicitly reject this formulation, suggesting at minimum that the Tribunal does not oppose the concept. If the term 'pure' is interpreted strictly in accordance with the 'ordinary meaning' principle under Article 31 of the Vienna Convention on the Law of Treaties (VCLT),[105] it could be understood as obligations that focus solely on the conduct of the state. By contrast, this implies that Article 194 of the UNCLOS should not be interpreted as limited to state conduct but must also account for some outcomes achieved by the state.

Meanwhile, it is crucial to consistently bear in mind the nature of due diligence as of conduct. Such an interpretation does not inherently conflict with the legal nature. In the *Pulp Mills Case*, the ICJ affirmed that Article 36 of the 1975 Statute establishes an obligation of conduct but further clarified that a state's failure to fulfil procedural obligations (in this case, environmental impact assessment requirements) constitutes a breach of due diligence.[106] In other words, if the state did not achieve the required results stipulated in the procedural obligations, this will serve as evidence that the state failed to meet the due diligence standard.[107] In the *Area Advisory Opinion*, the Tribunal defined these ' procedural obligations' as 'direct obligations.'[108] Regardless of their names, they both refer to a category of obligations that are concrete, specific, and result-driven, aimed at achieving

101 *COSIS Advisory Opinion* (n 1) 240.

102 *COSIS Advisory Opinion* (Minutes of the Public Sittings held from 11 to 25 September 2023) 341.

103 ibid.

104 *COSIS Advisory Opinion* (n 1) 241, 242.

105 Vienna Convention on the Law of Treaties (adopted 23 May 1969, entered into force 27 January 1980) 1155 UNTS 331, art 31(1).

106 *Pulp Mills Case* (n 27) 187, 204, 206.

107 Rozemarijn Roland Holst, *Change in the Law of the Sea: Context, Mechanisms and Practice* (Brill Nijhoff 2022) 222.

108 ITLOS *Area Advisory Opinion* (n 20) 245.

the 'intended result' under the due diligence obligations. While compliance with such obligations may serve as evidence of a state's fulfilment of due diligence, merely discharging these obligations is insufficient to demonstrate that the state has met the stringent standard of due diligence in the context of climate change.[109]

Unlike the vague concept of due diligence, procedural obligations are identifiable.[110] The ICJ has explicitly stated that substantive obligations and procedural obligations 'complement one another perfectly, enabling the parties to achieve the object of the Statute.'[111] As emphasized by the Tribunal, the manner of fulfilling due diligence obligation is objective rather than subjective,[112] and procedural obligations provide concrete criteria for such objectivity. This also addresses the rationale outlined earlier for identifying COSIS's conflation of legal concepts: the so-called 'obligations of result' imposed on states under Article 194 by COSIS - such as respecting international standards and relying on the best available scientific evidence - are in fact procedural obligations stipulated in subsequent provisions of Part XII of the UNCLOS.

3.2 The procedural obligations and their relationship between due diligence

The Tribunal in the *COSIS Advisory Opinion* indicates that the types of pollution most relevant to ocean climate change are confined to marine pollution caused from land-based sources, vessels and aircraft.[113] UNCLOS itself does not include detailed rules for controlling marine pollution from the above sources.[114] Instead, it creates a system to address the marine pollution by calling on its states parties to adopt international rules and standards for each source, as well as requiring states to legislate to implement such rules and standards and to enforce the legislation.[115] Additionally, Part XII of UNCLOS also establishes global and regional cooperation, technical assistance, and the environmental impact assessment (EIA)

109 Elise Johansen, Signe Busch and Ingvild Ulrikke Jakobsen, *The Law of the Sea and Climate Change: Solutions and Constraints* (1st edn, Cambridge University Press 2020) 93.

110 Heike Krieger, Anne Peters and Leonhard Kreuzer, *Due Diligence in the International Legal Order* (1st ed, Oxford University Press Oxford 2020) 45.

111 *Pulp Mills Case* (n 27) 77.

112 *COSIS Advisory Opinion* (n 1) 243.

113 ibid 265.

114 Alan E Boyle, 'Marine Pollution under the Law of the Sea Convention' (1985) 79 American Journal of International Law 347, 368.

115 Robert Beckman and Zhen Sun, 'The Relationship between UNCLOS and IMO Instruments' (2017) 2 Asia-Pacific Journal of Ocean Law and Policy 201, Robert Beckman and Zhen Sun, 'The Relationship between Unclos and Imo Instruments' (2017 Robin Churchill, Vaughan Lowe, Amy Sander, *The Law of the Sea: Fourth Edition* (Manchester University Press 2022) 990.

regime.[116] In the COSIS Advisory Opinion, the Tribunal recognized all these mechanisms as obligations incumbent on states parties to address the challenges posed by climate change.[117]

Nevertheless, a critical unresolved issue arises here: some scholars argue that while specifying obligations concretizes the abstract due diligence standard, this simultaneously diminishes its normative role in guiding state conduct.[118] Specifically, as the precision of due diligence standards within a legal regime increases, their pivotal influence as behavioral guidelines decrease. When rules are highly prescriptive, states are confined to mere compliance; conversely, it is in areas of discretion or regulatory flexibility that due diligence exerts its most significant influence by disciplining state actions.[119] In fact, this purported paradox is merely superficial. The due diligence obligation, as a conduct-based obligation, is not rendered inflexible by the detailed obligations under Part XII of the UNCLOS. This adaptability manifests in the following dimensions:

3.2.1 Discretionary leeway within procedural obligations

Although sections 2 to 6 of Part XII of the UNCLOS set out various obligations for states parties, these procedural obligations inherently retain significant discretionary leeway for application. In the *South China Sea Arbitration*, the arbitral Tribunal interprets Article 206 of UNCLOS, which relates to the EIA regime, indicating that the obligation to communicate reports of the results of the assessments is absolute, while the terms 'reasonable' and 'as far as practicable' in this provision contain an element of discretion for the state concerned.[120] In addition, in terms of the 'international rules and standards' referred in part XII of UNCLOS, which are usually called 'rules of reference',[121] while states parties retain discretion to select applicable international rules and standards based on specific circumstances, the erroneous or inadequate adoption or implementation of such rules and standards will constitute a breach of their due diligence obligations. For example, In the *Arctic Sunrise Arbitration*, Russia asserted that its boarding, inspection, and seizure of the *Arctic Sunrise* vessel were justified by the ship's alleged dangerous manoeuvring, which it claimed violated relevant international rules and standards. However, the arbitral Tribunal concluded that Russia had

---

116 Lingjie Kong, 'Environmental Impact Assessment under the United Nations Convention on the Law of the Sea' (2011) 10 Chinese Journal of International Law 651, 655.

117 *COSIS Advisory Opinion* (n 1) 441.

118 Krieger, Peters and Kreuzer (n 110) 170.

119 ibid 161.

120 *The South China Sea Arbitration (The Republic of Philippines v. The People's Republic of China)* (2016) PCA Case N. 2013-19, 948.

121 Lan Ngoc Nguyen, 'Expanding the Environmental Regulatory Scope of UNCLOS Through the Rule of Reference: Potentials and Limits' (2021) 52 Ocean Development & International Law 419."

erroneously invoked these rules and standards, thereby rendering its actions legally unfounded.[122] Therefore, these procedural obligations do not impose absolute or rigid obligations on states parties. Instead, states must exercise discretion in fulfilling their due diligence obligations to ultimately strive toward achieving the 'intended results' outlined in Articles 192 and 194 of UNCLOS.

3.2.2 The open-endedness of procedural obligations

Another rationale for asserting that the procedural obligations do not diminish the significance of due diligence lies in the fact that, in the context of climate change, the UNCLOS does not prescribe an exhaustive list of specific obligations for states parties. The *COSIS Advisory Opinion* illustrates that the 'rules, standards and practices and procedures encompass a broad range of norms, both binding and non-binding in nature.'[123] This signifies that the rules of reference which states are obligated to consider are inherently non-exhaustive and will continue to evolve in the future alongside scientific advancements and institutional developments.[124] This reality aligns seamlessly with the dynamic nature of due diligence, as articulated by the Tribunal: 'The standard of due diligence may change over time, given that those factors constantly evolve.'[125] Requiring states parties to consider or apply all international rules and standards is neither practical nor feasible. This is not only because such rules and standards are infinite in scope, but also because the very qualification of whether a specific rule or standard meets the threshold of 'generally accepted' under UNCLOS remains inherently contentious.[126] Consequently, states must instead act in good faith to apply these rules and standards to the best of their ability - an approach that inherently reflects the requirements of due diligence.

This characteristic is evident not only in the 'rules of reference' but also in other types of obligations, such as obligations of international cooperation. For instance, in the *Croatia v. Slovenia Arbitration*, the arbitral Tribunal recognized the existence of numerous international treaties and arrangements concerning cooperation between the parties.[127] These treaties aimed to achieve

---

122 *The Arctic Sunrise Arbitration (Netherlands v. Russia)* (2015) PCA Case N. 2014-02, 301.

123 *COSIS Advisory Opinion* (n 1) 270.

124 Richard Alan Barnes, 'The Continuing Vitality of UNCLOS' (Social Science Research Network, 15 August 2016) 20 <https://papers.ssrn.com/abstract=2839229> accessed 20 May 2025.

125 *COSIS Advisory Opinion* (n 1) 239.

126 Jiangtao Qian, Kangjie Sun and Yen-Chiang Chang, 'The Impact of the ITLOS Climate Change Advisory Opinion on the Development of International Law' (2024) 170 Marine Policy 106406.

127 *In the Matter of an Arbitration under the Arbitration Agreement between the Government of the Republic of Croatia and the Government of the Republic of Slovenia, Signed on 4 November 2009 (Croatia v. Slovenia)* (2017) PCA Case N.2012-04, 1135.

'intended results', specifically to 'ensure the limitations upon their right to exercise jurisdiction'.[128] Notably, the arbitral Tribunal did not single out any specific treaty or arrangement. Instead, it urged the parties to 'cooperate fully with each other' to guarantee that activities in the disputed area would not contravene the 'intended results of such obligations of cooperation.[129] The Tribunal's approach shifted focus away from cataloging treaty provisions and instead emphasized the overarching significance of these rules in advancing the 'intended results'. The concrete modalities of cooperation were left to the discretion of the states, to be realized through due diligence - a conclusion equally applicable to addressing ocean climate change challenges.

This raises a corollary question concerning the tension between procedural obligations and the standard of due diligence. If a breach of any single procedural obligation were sufficient to constitute a failure of due diligence, then, in light of the non-exhaustive nature of such obligations, states parties would face enduring uncertainty as to whether they have met the required standard.[130] In the *Nicaragua Case*, Nicaragua argued that Costa Rica had violated due diligence obligations by failing to fulfil its duties to conduct an EIA, provide notification, and engage in consultation.[131] The ICJ, after establishing that Costa Rica had indeed failed to perform the EIA, directly concluded that this omission constituted a breach of due diligence.[132] It further held that, as the violation of due diligence had already been confirmed, there was no need to examine whether Costa Rica had complied with the notification and consultation obligations.[133] The court's reasoning may lead to an inference that the failure to fulfil any relevant procedural obligation can constitute a violation of due diligence by the state party. In the context of climate change, this conclusion appears applicable to a heightened standard of due diligence.

In fact, due diligence and procedural obligations do not fall into the aforementioned dilemma. It is important to clarify that both various rules of reference and international cooperation obligations serve to assist in defining the standards for fulfilling due diligence obligations. According to Part XII of UNCLOS, the main types of procedural obligations undertaken by states are clearly defined:

128 ibid.

129 ibid.

130 Jutta Brunnée, *Procedure and Substance in International Environmental Law* (Brill | Nijhoff 2021) 4.

131 *Nicaragua Case* (n 54) 165.

132 *Nicaragua Case* (n 54) 164.

133 ibid 168.

the obligation to conduct EIA,[134] the obligation to cooperate,[135] the obligation to legislate,[136] the obligation to enforce legislation and others.[137] Within the existing legal framework, the core issue is not that states are unable to anticipate new types of obligations but rather how to determine whether they meet the stringent standards of due diligence.

In the case concerning *Whaling in the Antarctic*, the ICJ faced a similar challenge of interpreting an abstract concept. When adjudicating whether Japan's whaling activities fell under the category of 'for purposes of scientific research,' the ICJ held that various factors (such as lack of transparency and the use of lethal research methods) were not central to clarifying this abstract notion.[138] The key lay in the view that 'the evidence...should allow one to understand why that sample size is reasonable in relation to achieving the program's objectives, when compared with other possible sample sizes.'[139] This reasoning remains relevant to interpreting the 'stringent' nature of due diligence, which requires states to clearly justify how the measures adopted - among various rules of reference and relevant considerations - comply with due diligence obligations and demonstrate that all necessary measures have been taken to fulfil the objectives of Articles 192 and 194 of UNCLOS. Crucially, the articulation of a state's decision-making rationale is essential for reconciling due diligence with procedural obligations.

3.2.3 Divergent requirements for the detailed obligations

The obligations under Part XII of UNCLOS impose varying degrees of stringency on states parties.[140] Taking 'rules of reference' as an example: for land-based pollution, states are required to 'take into account' international rules and standards.[141] In contrast, the obligation for vessel-source pollution uses the mandatory term 'shall', demanding stricter compliance.[142]For pollution from or through the atmosphere, the requirement is similar with that of land-based pollution - states need

134 United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 3 (UNCLOS), part xii, section 4.

135 ibid part xii, section 2.

136 ibid part xii, section 5.

137 ibid part xii, section 6; *COSIS Advisory Opinion* (n 1) 441.

138 *Whaling in the Antarctic (Australia v. Japan: New Zealand intervening)* (Judgment) [2014] ICJ Rep 226, 137, 195.

139 ibid 195.

140 Roland Holst (n 107) 252.

141 UNCLOS (n 134) art 207(1).

142 ibid art 211(1).

only to 'take into account' applicable rules and standards.[143]

The *COSIS Advisory Opinion* clarified the term 'taking into account', indicating that states are not required to adopt the rules and standards but they must give 'due consideration' to them in good faith.[144] The term 'due consideration' is highly similar with 'due regard', which is frequently mentioned in UNCLOS.[145] In the *Enrica Lexie Incident*, the arbitral Tribunal defined 'due regard' as 'with the proper care or concern for,' and also defined the meaning of 'regard' as 'attention, care, or consideration given to a thing or person.'[146] The arbitral Tribunal's interpretation of the term 'regard' through the lens of 'consideration' in this case demonstrates their functional interchangeability in certain contexts. Furthermore, in the *Chagos Marine Protected Area Arbitration*, the arbitral Tribunal clarified that phrases such as 'due regard' or 'due consideration' do not establish 'any universal rule of conduct' or impose 'a uniform obligation' on states.[147] Instead, how a state fulfils the requirement to accord 'due consideration' depends on a context-specific balancing of factors, including the nature of the rights, the relative importance, the extent of anticipated impairment, etc.[148]

In respect of climate change, to achieve the 'intended results' of protecting, controlling, and reducing harm to the marine environment, states parties are required to adhere to a high standard of due diligence. It means that the requirement for 'due consideration' - or, equivalently, 'taking into account' international rules and standards - becomes correspondingly more stringent. States must adopt these international rules and standards as comprehensively as possible and in good faith. In line with the Tribunal's conclusion in the *COSIS Advisory Opinion*, the obligation of due diligence 'does not preclude states from adopting more rigorous measures to protect and preserve the marine environment than provided for therein',[149] provided such measures remain consistent with the UNCLOS. Critically, the detailed provisions do not diminish the flexibility inherent in fulfilling due diligence; rather, they coexist with a state's discretion to exceed baseline standards in pursuit of enhanced marine protection. In essence, due diligence and the detailed obligations are not mutually exclusive but can achieve harmonious coexistence within the legal framework of UNCLOS.

143 ibid art 212(1).

144 *COSIS Advisory Opinion* (n 1) 271.

145 UNCLOS (n 134) arts 27, 39, 56, 58, 60, 66, 79, 87, 142, 148, 161, 162, 163, 167, 234, 267.

146 *Enrica Lexie Incident (Italy v. India)* (2020) PCA Case N.2015-28, 973.

147 *Chagos Marine Protected Area Arbitration (Mauritius v. United Kingdom)* (2015) PCA Case N. 2011-03, 519.

148 ibid.

149 *COSIS Advisory Opinion* (n 1) 440.

4. Conclusion

Despite persistent scepticism surrounding the utility of the conduct-result dichotomy in determining states' obligations under the UNCLOS, the repeated emphasis by states represented by COSIS on the significance of obligations of result in climate change advisory proceedings before ITLOS and the ICJ underscores the contentious nature of this issue and the necessity for doctrinal clarity. Whether it is due diligence itself or Articles 192 and 194(1)(2) of UNCLOS- which ITLOS has identified as 'due diligence provisions'- their legal nature is purely that of obligations of conduct, with no possibility of simultaneously encompassing obligations of result. Neither the existential urgency of climate change nor isolated jurisprudence interpreting analogous provisions as obligations of result can alter this conclusion.

COSIS's misinterpretations largely stem from conflating elements that clarify the standards for fulfilling due diligence with independent obligations. Whether it is the phrase 'all necessary measures to ensure' in Article 194 of UNCLOS, the Paris Agreement's 1.5°C temperature goal, or the procedural obligations under Part XII of the Convention, these provisions serve to clarify the stringent compliance standards for due diligence rather than imposing additional obligations of result. Procedural obligations and due diligence can achieve systemic harmonization, collectively advancing the intended objective of preventing, controlling, and reducing marine pollution. There is no inherent conflict in their application: states must adopt all necessary measures to strive toward the intended outcomes, and the reasoned justification of a state's decision-making process holds particular significance in demonstrating compliance with due diligence obligations.

Maritime Safety
and Security Law Journal

The Houthi Attacks on Shipping and Maritime Security

*Ademuni ODEKE**

Abstract

The Houthis have attacked over one hundred merchant ships and threatened undersea cables as well as oil and gas pipelines in the Gulf of Aden, the Bab el-Mandeb Strait, and the Red Sea since the Israel–Gaza conflict began in October 2023. Like the attacks in the Strait of Malacca and the earlier Somali piracy crisis, these incidents have occurred at two of the five major chokepoints in global maritime trade. Taking place adjacent to the piracy-ridden Somali coast, the attacks have endangered ships and their crews, undermined maritime security, hampered international humanitarian efforts, threatened freedom of navigation, and increased both the costs and transit times of commercial shipping and global energy supplies. This article assesses these impacts, focusing on whether the attacks constitute a threat to maritime safety in contravention of the International Convention for the Safety of Life at Sea (SOLAS), as amended, and to maritime security (piracy, armed robbery against ships (ARAS), maritime terrorism, and related offences) under the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation (SUA Convention).

Keywords: international law, UNCLOS, maritime security, piracy, ARAS, NSAs.

First published online: 6 February 2026

1. Introduction

The Houthis have targeted over one hundred and thirty ships with missiles and drones since the Gaza conflict started in October 2023, seizing several of them and sinking others in a campaign that has killed and wounded several sailors and threatened maritime security. To date they have damaged over thirty-four ships, sank four, and killed eight seafarers. Because it is a symbol of economic, geopolitical, and military prowess, shipping has long been the target of enemy retaliatory economic warfare. That was the case during the American War of Independence,[1] the American Civil War,[2] WWI and WWII, and in several regional conflicts, including in the Persian Gulf.

*Professor of International Maritime Law and Policy, Special Advisor to and Leading Researcher at the National Centre for the Sea and Maritime Law (DEHUKAM), Ankara, Türkiye.

1 19 April 1775 – 3 September 1783.

2 12 April 1861 – 9 April 1865.

In the Middle East, attacks on shipping have occurred during the Iran-Iraq War,[3] the First[4] and Second Gulf Wars,[5] and intermittently ever since. The attacks are a maritime security risk especially in a polarized region with wider geopolitical issues. Between the Gulf Wars and the current attacks, other assaults in the region have included the Al-Qaeda bombing of the US SS Cole, in 2000 at the port of Aden, the *MV Limburg,* in 2010 in the Gulf of Aden, and the *M Star* in Omani territorial waters in 2010. However, current attacks are unique for varied reasons including their occurrence at a heightened time in an already volatile region. The Houthis' status as a non-state entity complicates determination of culpability for their attacks.

The Houthis, rivalling the internationally recognised Yemeni government,6 control most of north Yemen, including the capital, Sanaa. However, they are not a recognized government so their actions can be assimilated to those of non-state actors (NSAs) and, therefore, piracy for purposes of determining private motives. This is irrespective of their current attacks being unlike those of past pirates and insurgents who did not control territory. By emulating the strategic locations of the Malacca Strait and Somali piracy and leveraging their own position at a key trade chokepoint, the Houthis have targeted shipping bottlenecks between the Gulf of Aden, the Bab-el-Mandeb Strait, and the Red Sea. The Bab-el-Mandeb is important for its role in longstanding rivalries among regional and great powers. The Strait forms a vital strategic link in sea routes between the Mediterranean and the Indian Oceans via the Suez Canal. The attacks have had profound consequences on maritime and energy security.

Against that backdrop, the article's main aims are to argue that the Houthi attacks on shipping are a maritime security issue[7] and to systematically examine the various maritime security categories the attacks make up. The article treats maritime security as the exposure of vessels, their cargo, and

3 22 September 1980 – 20 August 1988; The anti-shipping campaigns during the Iran-Iraq War (1980-1988) are also known as the *Tanker War*. In 1981, Iraq began attacks on ships to weaken Iran's ability to fight, initially attacking ships carrying military supplies to the ground war front and later attacking ships carrying Iran's exports. The *Tanker War*, part of the larger Iran–Iraq War, was a series of military attacks by Iran and Iraq against merchant vessels in the Persian Gulf and Strait of Hormuz from 1981 to 1988. Iraq was responsible for 283 attacks while Iran accounted for 168.The Iranian navy attacked Kuwaiti tankers, sometimes using Silkworm missiles and by mining Kuwaiti ports like Mina al-Ahmadi. The U.S. Navy intervened in the conflict to protect international shipping against Iranian attacks, eventually escorting Kuwaiti tankers under their own flag. See, Ademuni Odeke, 'Shipping and the Gulf War' (1987) 10 Marine Policy Reports 3, 4-12.

4 2 August 1990 – 28 February 1991, necessitating the transfer of Kuwait tankers to the US flag for the second time for protection against Iraq attacks.

5 20 March 2003 – 15 December 2011, also known as the Iraqi War.

6 Christian Edwards, 'Who are the Houthis and why are they attacking Red Sea ships?' (*CNN*, 5 February 2024) <https://edition.cnn.com/2023/12/19/middleeast/red-sea-crisis-explainer-houthi-yemen-israel-intl/index.html> accessed 25 March 2025.

7 Emilio Rodriguez-Diaz, Juan Ignacio Alcaide Jiménez and Ruth Garcia-Llave., 'Challenges and Security Risks in the Red Sea: Impact of Houthi Attacks on Maritime Traffic' (2024) 12 Journal of Marine Science and Engineering, 1900.

sea users to harm through a wide spectrum of offences.[8] To achieve the above objectives, the article first provides a background to the maritime security perspectives of the attacks in Part 1 (Introduction) and then examines the attacks under the maritime security categories listed above.[9]

To do so, the article questions whether the attacks are:

(a) Piracy;

(b) Armed robbery against ships (ARAS);[10] and

(c) unlawful attack against merchant ships under the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation, 1988 as amended[11] (SUA Convention) which covers:

(i) maritime terrorism;

(ii) deployment of Weapons of Mass Destruction (WMD);

(iii) cyber-attacks;

(iv) pollution of the marine environment; and

(v) other threats to maritime security.

The proposed solution proffered to end the attacks is a united action by the international community, like those adopted against Somali piracy, preferably in the form of a comprehensive UN Security Council Resolution (UNSCR) invoking Part VII of the UN Charter. For that, the article notes that recent UNSCR 2272/2024, UNSCR 2739/2024, UNSCR 2768/2025, and UNSCR 2787/25 on the crisis are useful markers.

So, Part 1 of the article provides background narratives. Thereafter, coverage of maritime

8 They also include maritime terrorism; maritime piracy; ARAS; illegal trafficking of goods and people; trafficking in narcotics; use of WMD; maritime cyber security; illegal, unreported, and unregulated fishing; and pollution of the marine environment.

9 ibid.

10 Created by the International Maritime Organization General Assembly (18 January 2010) Res. A/26/1025.

11 Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation [1988] and Protocol to the Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation (adopted 10 March 1988, entry into force 1 March 1992) UNTS 29004; Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf (adopted 14 October 2005, entry into force 28 July 2010) UNTS 3429.

security is divided into two sections. Part 2 covers the first section with a focus on piracy and ARAS; Part 3 discusses the second section with emphasis on maritime terrorism, use of WMD, cyber-attacks and other maritime security aspects; Part 4 assesses future prospects of the attacks and proposed solution; and Part 5 concludes.

2. Whether the Attacks are Maritime Piracy and Aras

2.1 Whether the Attacks are Piracy

2.1.1 Definitional Tests

The issue in this section is whether the Houthi attacks amount to piracy. To constitute piracy the attacks must satisfy piracy definition as per Article 101 of the United Nations Convention on the Law of the Sea (UNCLOS)[12] which provides that:

> 'Piracy' consists of any of the following acts:
>
> (a) any illegal acts of violence or detention, or any act of depredation, committed for *private ends* by the *crew or the passengers of a private ship or a private aircraft*, and directed:
>
> (i) *on the high seas*, against another ship or aircraft, or against persons or property on board such ship or aircraft.
>
> (ii) against a ship, aircraft, persons, or property *in a place outside the jurisdiction of any State*;
>
> (b) any act of voluntary participation in the operation of a ship or of an aircraft with knowledge of facts making it a pirate ship or aircraft.
>
> (c) any act of inciting or of intentionally facilitating an act described in subparagraph (a) or (b)' (*emphasis added*)

Before analysing Article 101, it is noted that there are three offences under the definition: 'illegal acts of violence or detention' (first offence); 'any act of voluntary participation' (second offence); and 'any act of inciting or intentionally facilitating' in paragraphs 101(a) through to 101(c)

12 United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 16 November 1994) 1833 UNTS 396 (UNCLOS).

(third offence)[13] thereof, respectively. The first and second offences require the 'high seas' test while the third does not. Those requirements are detailed below.[14]

2.1.2 'High Seas' Test

For the attacks to satisfy the 'high seas' test, also known as the 'geographical scope', requirement,[15] there must be minimum area in the Gulf of Aden, Bab-el-Mandeb and the Red Sea of 12 NM on either side beyond the territorial sea (TS) to accommodate the high seas or areas beyond national jurisdiction (ABNJ)[16]. The Bab-el-Mandeb Strait is only 18NM wide at its narrowest point, thereby limiting maritime traffic to just 2NM wide channels for inbound and outbound shipping. That leaves no scope for the high seas or ABNJ beyond the 24NM for the combined TS and contiguous zones (CZ). So, there is insufficient space for the commission of piracy in the Strait.[17]

The Red Sea, on the other hand, is 400 NM long and 221 NM at its widest point. Less the 24 NM TS on both sides, which leaves 148 NM and 173 NM, respectively, sufficient for high seas and ABNJ. However, the attacks would have to be within those remaining 173 NM to constitute piracy. Incidents inward of 12 NM would constitute ARAS and SUA offences (see ARAS below).

That leaves the Gulf of Aden, another vital waterway for shipping, especially for Persian Gulf oil, making it an integral waterway in the world economy. Nine hundred kilometres (km) long and 500 km wide, the Gulf of Aden is an important waterway for transporting Persian Gulf oil. Together with the Red Sea, it forms an essential oil transport route between the Middle East, Europe, the Americas, and the Far East. Nevertheless, piracy remains possible in areas outside Yemen's TS; within the TS and along the coastline, such acts would instead constitute ARAS or SUA offences. The added dangers are that the northern part of the Gulf of Aden is bordered by Yemen and the southern part by Somalia, both hostile waters from risks of Houthi and Al Shabab[18] attacks and Somali piracy. So, the hijack and detention of the Bahamian registered *Galaxy Leader* and its 25 crew by the Houthis

---

13 References to (first offence), (second offence), (third offence) and (Piracy 3) in this article are the author's own inventions and are not used in the Convention.

14 Tests used by the IMO in 'Circular Letter concerning information and guidance in elements of international law regarding piracy,' (18 February 2011) Letter Circular 3180 of 2011/LEG 98/8/1E, Annex ('IMO Piracy Information and Guidance').

15 See, Ademuni-Odeke, 'You Are Free to Commit Piracy and Armed Robbery Against Ships but Please Do Not Do It in This Place: Geographical Scope of Piracy and Armed Robbery Against Ships Under UNCLOS and Related International Instruments' (2019) 50 Journal of Maritime Law and Commerce 4, 407-449.

16 ibid, definition of piracy, 3-6.

17 ibid. The author suggested that the high seas start from and includes the contiguous zone in which case piracy could be committed in the contiguous zone.

18 Al-Shabab are Somali insurgents benefiting from the piracy and further complicating maritime security.

beyond the 12 NM in the high seas was piracy.[19] Secondly, the attacks must fulfil the 'ships' and 'aircrafts' test.

2.1.3 'Ships' and 'Aircrafts' Test

For the attacks to satisfy this test, the Houthi drone-boats, and aircrafts [20] used must fulfil the definition of 'ships' and 'aircrafts,' respectively. A drone boat (or drone ship, sea drone, or uncrewed or unmanned surface vessel (USV)) is a ship or boat that runs on the water's surface without a crew. This satisfies the provisions of section 313(1)(c) of the UK *Merchant Shipping Act* 1995 definition of a ship as including 'every description of vessel used in navigation, whether manually or mechanically propelled', although their operational modes are immaterial for the definition. Most national legislations have similar or identical definitions of ships. For this reason, the drone boats including USVs are ships, so the requirement is met.

Similarly, the Houthis' use of helicopters, fixed wing aircrafts, sea drones and air drones in their attacks meets this requirement as they are ships and/or aircrafts. Drones can be fixed wing, like an airplane, or vertical take-off and landing (VTOL) with rotary blades.[21] Likewise, a drone—also referred to as an unmanned aerial vehicle (UAV) or unmanned aircraft system (UAS)—is an aircraft that operates without a human pilot, crew, or passengers, whether in the form of a UAV or an autonomous unmanned vehicle (AUV). The same applies to the Houthi use of speedboats laden with explosives. Thus, the storming and commandeering of the *Galaxy Leader* (above) by airborne Houthi commandos was a piracy act, as were the attacks on the other vessels. For these reasons, the ships' and/or aircrafts' test is met. That ordinary pirates do not normally have the military capability and resources available to the Houthis is immaterial for the purposes of this test. Thirdly, the attack must involve at least two separate ships and/or aircrafts.

2.1.3.1 'Two-Ships' and 'Two-Aircrafts' Sub-Test

Piracy involves two separate ships and/or aircrafts - the 'two ships' test. The attacking ship(s) must be separate from the attacked ship (s) and/or aircraft(s). Under Article 101(a) of UNCLOS, piracy is committed by the crew or the passengers of one ship or aircraft against another ship or

19 UNCLOS (n 12) article 101(a)(1).

20 This test is not included under the IMO 'Two Ships' Test but is used by this author, as an extension to it, to avoid doubts whether Houthi UVSs and UAVs satisfy ships and aircrafts requirements, respectively.

21 Tom Sharpe, 'Red Sea War: Houthi drone boat detonation opens a new chapter Missiles, USVs, pirates - just one thing is missing from the Bab-el-Mandeb shooting gallery' (*The London Telegraph*, 5 January 2024) <www.telegraph.co.uk/news/2024/01/05/red-sea-war-trade-disruption-drone-boat-explosion/?msockid=170ac1211b2a6e2604e2d74b1f2a6a79> accessed 5 March 2025.

aircraft. With the emphasis on 'ships,' it is often forgotten that piracy under the Convention is also committable by aircraft(s). Although implied as a piracy, attacks by two ships or two aircrafts against a ship or aircraft was not envisaged and is not specified in the Convention. Nevertheless, it is essential that the attackers, as well as their ships or aircrafts, originate from outside the confronted ship rather than from within it. So, the hijacking of a ship by the ship's passengers from within is not piracy. Thus, if passengers board and hijack a ship, this is not considered piracy because there are not second 'ship' or 'aircraft' involved. The exception to this rule is a hijack by the crew of a warship, government ship or government aircraft who mutiny and then turn it into a pirate ship.[22]

Thus, the 1789 seizure of *HMS Bounty*[23] in the South Pacific by Acting Lieutenant Fletcher Christian and disaffected crew members against their captain, Lieutenant William Bligh, was not an act of piracy, as it originated from within the vessel. Under current treaty law, the situation would be different, but only if the hijacked ship were subsequently operated as a pirate vessel.[24] It is probable that this case influenced the drafting of Article 15 of the 1958 Geneva Convention on the High Seas (the Geneva Convention)[25] and Article 102 of UNCLOS, which addresses piracy committed by "a warship, government ship, or government aircraft whose crew has mutinied."

Likewise, in the *Santa Maria,*1961,[26] Captain Galvão and his accomplices' boarding and taking control from within of the cruise liner masquerading as 'musicians', with their weapons disguised as 'musical instruments', was not piracy. Similarly, the Palestinian Liberation Front (PLF) activists' boarding of and taking control of the *Achille Lauro,* 1985,[27] veiled as 'passengers', was not piracy. However, all three incidents are distinguishable from the current Houthi activities where both ships and/or aircrafts used are external and where the use of either is sufficient for the commission of piracy[28]

22 UNCLOS (n 12) article 102.

23 Harry Lionel Shapiro, 'The Heritage of the Bounty', Nature, vol 138, pp 382 – 383.

24 UNCLOS (n 12) article 102. Equally, using a pirated ship to commit piracy constitutes piracy. However, this raises the following issues:(a) is using a pirated ship for simply tracking other ships for piracy purposes, piracy under Article 101?; and (b) is such ship a pirate ship under Article 102 and Article 103? Otherwise, any ship can provide comprehensive tracking for all other ships within the vicinity. The Israelis bombed such a vessel [*the Galaxy Leader*] held by the Houthis allegedly to prevent its use as a tracking vessel. Is bombing one of the remedies under Articles 103 and 105? see, 'Israel strikes Houthi targets including hijacked Galaxy Leader' (*Lloyd's List News*, 7 July 2025) <www.lloydslist.com/LL1154115/Israel-strikes-Houthi-targets-including-hijacked-Galaxy-Leader> accessed 14 July 2025.

25 Convention on the High Seas (1958) 450 UNTS 11.

26 David Raby, 'Transatlantic intrigues: Humberto Delgado, Henrique Galvão and the Portuguese exiles in Brazil and Morocco' (2004)3 Portuguese Journal of Social Sciences 4, 143-156.

27 Malvina Halberstam, 'Terrorism on the High Seas: *The Achille Lauro*, Piracy and the IMO Convention on Maritime Safety' (2017) 82 American Journal of International Law 2, 269–310.

28 UNCLOS (n 12) article 101(a).

Fourth, the attacking vessel must be a private ship and/or aircraft.

2.1.3.2 'Private Ships' and 'Private Aircrafts' Sub-Test

Attack by private ship or aircraft[29] is needed for an act of piracy. Conditions in Article 101(a) that the ships and aircrafts be privately owned, rather than government owned or run, would cover vessels owned and run by NSAs, such as the Houthis. Article 101(a) absolves only authorised state entities and state sanctioned acts. Houthi ships and aircrafts lack state sanction and can, therefore, be assimilated to private ships and aircrafts for the purposes of piracy under the provision. As they are actions of NSA-owned ships and aircrafts, the Houthi attacks are technically piracy.

UNCLOS reiterates that private ships and aircrafts include government owned ships and aircrafts whose crew has mutinied.[30] So, since they are run by NSAs, the Houthi pirate ships and aircrafts and their crews or pilots are not only assimilated to pirate ships but can also be visited under Article 110 of UNCLOS, arrested and the suspects prosecuted under Article 105 of UNCLOS. It is for these reasons that the hijack of the *Galaxy Leader* by Houthi helicopter-borne invaders launched from a private ship constituted piracy. Fifth, reasons for the attacks must be for 'private ends'.

2.1.4 'Private Ends' Test

2.1.4.1. Convention Sub-Test

This core requirement in the piracy definition has two sub-tests: conventional textual (in UNCLOS texts) and interpretational (implied in or derived from interpretation of UNCLOS texts). The private ends test is based on whether the act was committed for personal gain or revenge (see under the feeling of hatred and desire for vengeance below), or without lawful authority. The concept of the private ends in the treaty differs from that of either the ordinary, commercial, or business context and does not necessarily have any bearing on commercial and private gains. It must be an objective test that evaluates the relationship among the act, actors, and states. If violence on the high seas between two ships or aircrafts lacks state sanction, then it is committed for private ends and is thus piracy. That is the cardinal principle of piracy under the Geneva Convention and UNCLOS.

This previously international customary law rule was codified into, and is outlined in, Article 15 of the Geneva Convention and Article 101 of UNCLOS. Thus, for the Houthi attacks to constitute pi-

29 UNCLOS (n 12) article 103.

30 UNCLOS (n 12) article 102 article103.

racy under Article 101(a) of UNCLOS, it must be committed for private ends,[31] also inappropriately referred to by some commentators as 'private motives'.[32] As noted above, if violence on the high seas between two ships or aircrafts lacks state sanction, it is committed for private ends and is, therefore, technically piracy. Although that is settled law, the Houthis could argue that their actions are solely in support of the Palestinians and, therefore, without private gains to themselves (see also under political/public motives-below). However, contrary to that inference, personal economic gains are irrelevant for purposes of private ends. On the contrary, the Houthi attacks are motivated by revenge for Israeli bombardments of Gaza – the feeling of hatred and desire for vengeance which is equated to private ends (see below).

The Geneva Convention and UNCLOS drafters and negotiators included private ends for a reason, to exempt state sanctioned use of naval, government-owned and/or government ran ships and aircrafts actions from the piracy definition. Although originating from a judicial interpretation, as the language was not used in the convention, an American Federal Court followed a Belgian Appeal Court decision that private ends may also be constituted by mere feelings of hatred and desire for vengeance. That would defuse the Houthi public motive argument of their pro-Palestinian vengeance.

2.1.4.2. 'Feelings of Hatred' and 'Desire for Vengeance' Sub-Test

This new concept was introduced by the Belgian Court in *The Castle John or The Greenbeard the Pirate* (*The Greenbeard, the Pirate),*[33] in which Greenpeace activists from the mother ship, the *Sirius,* were convicted of piracy based on feelings of hatred and desire for vengeance for attempting to stop the tanker M.S. Falco and the *Wadsy Tankerdredger* from dumping pollutants into the North Sea. The decision followed a commentary to that effect by the International Law Commission (ILC) *Rapporteur* on clause thirty-nine of the ILC draft that resulted into the piracy definition in Article 15[34] of the Geneva Convention.[35]

The Belgian decision was followed by Justice Kozinski in the American case of the *Institute of*

---

31 UNCLOS uses 'private ends;' 'private motive' are academic interpretations See Ademuni Odeke, 'The Evolution, Nature, and Application of Private Ends' (2021) in Piracy Definition Ascomare Yearbook on the Law of the Sea, 165-196.

32 ibid, 165-196.

33 *The Castle John and Nederlandse Stichting Sirius v. NV Mabeco and Parfin* (1988)77 International Law Reports, 537-541. *The Greenbeard the Pirate* concern the definition of 'private ends'. See also Samuel Pyeatt Menefee, 'The Castle John or The Greenbeard the Pirate' (1993) 24 California Western International Law Journal 1, 1-16.

34 UNCLOS (n 12) article 101.

35 Report of the International Law Commission on the Work of its Eighth Session (4 July 1956) Official Records of the General Assembly, Eleventh Session, Supplement No.9 (A/3159).

Cetacean Research v Sea Shepherd Conservation Society, (*The Seashepherd)*[36] which convicted anti-whaling campaigners for trying to stop Japanese whaler hunters. The two decisions were buttressed by the fact that, in the said *Commentary*, the ILC *Rapporteur* also expressed an opinion that an actual robbery was not material for the commission of piracy. It is unclear whether the *Rapporteur* was aware of or influenced by similar sentiments in the earlier English court verdict in *Re Piracy Jure Gentium*[37] that, 'actual robbery is not an essential element in the crime of *piracy jure gentium*'. [38]

Implications of the above analysis is that private ends have no relation to commercial gain, as logic would suggest. The two authorities equated *feelings of hatred* and *desire for vengeance* to a full satisfaction or private gain amounting to private end. As opined above, on those bases the *HMS Bounty*, the *Santa Maria* and the *Achille Lauro*[39] hijackers would have been convicted under Article 101 of UNCLOS for feelings of hatred and desire for vengeance,[40] post-*The Green Beard* and *The Seashepherd* decisions, as would the attackers in *The Arctic Sunrise*[41] had the case against the latter been sustained by the Russian Federation Prosecutor.

Similarly, and for the same reasoning, the Houthi attackers could face justice in their attempts to avenge Israeli bombardments of Gaza. Their *feelings of hatred* and *desire for vengeance* for Israeli actions in Gaza, although understandable, is inexcusable. There is also a discrepancy in the Houthi actions. For instance, the attack linked to interests within the group, against the tanker *The MV Chem Pluto*[42] off the coast of the western State of Gujarat, India, over 3,000 NM from the Yemeni coastline, casts doubt on their actual motives. Although the Houthi targeted vessels are supposed to be linked

---

36 *Institute of Cetacean Research v. Sea Shepherd Conservation Society* (*The Sea Sheperd*) [2013] United States District Court, W.D Washington State (708 F. 3d 1099, 9th Circuit2013).

37 *Re Piracy Jure Gentium* (1934) AC 586, Judicial Committee of the Privy Council; it is uncertain whether the *ILC Rapporteur* was aware of and, therefore, influenced by this case in his commentary.

38 ibid, 600; the opinion was expressed by way of an answer to a question referred to the Privy Council under Judicial Committee Act, 1933, s.4; *Halsbury's Statutes* (2nd Edn) 177.

39 Malvina Halberstam, 'Terrorism on the High Seas: *The Achille Lauro*, Piracy and the IMO Convention on Maritime Safety' (2017) 82 AJIL 2, 269–310.

40 Despite the "two ships" test not being met in the *Bounty*, *Santa Maria* and *Achille Lauro* cases. There was a Court Martial in 1792, for the loss of the *Bounty,* but no prosecution for piracy. There were 'legal proceedings' following the hijacking of the *S.S. Santa Maria* in 1961, although their exact nature is not described as 'court trials' in the provided results, but rather discussions about piracy charges, extradition and securing the vessel and cargo for the rightful owners. The events of the hijacking were complex, involving potential charges of piracy and questions of international law regarding the rebels' actions and seizure of the ship. However, there were prosecutions and acquittals in the *Achille Lauro*.

41 See the PCA conclusion that Greenpeace protests directed at a fixed platform (the *Prirazlomnaya*) did not meet the requirement of piracy to be directed 'against another ship'; *Arctic Sunrise Arbitration (Netherlands v. Russia) (Award on the Merits),* PCA case n. 2014-02, 14 August 2015, paras. 238-241.

42 The Liberian-flagged, Japanese-owned, and Dutch-operated chemical tanker was struck by a one-way drone allegedly launched by the Iranian or Houthi military, causing fire but without injuries. At the time, it was carrying crude oil from Saudi Arabia to India.

to Israeli and Anglo-American interests, most in fact do fly other flags. Additionally, it is not clear whether the Iranian seizure of the Marshall Islands-flagged oil tanker *St. Nikolas* while transiting the international waters off the Gulf of Oman had any connections with the Houthi attacks. For these reasons, the current Israeli-Gaza conflict was merely the catalyst for unsubstantiated underlying Houthi motives.

Thus, the *feelings of hatred* and *desire for vengeance* puts the Houthi activists within range of *The Greenbeard* and *The Seashepherd* interpretation of private ends and, therefore, the definition of piracy.

The corresponding Houthi claims of 'political motives' and 'public motives' as extensions of private ends is also discredited.

2.1.5. Are there 'Political Motives' and 'Public Motives' Tests?

2.1.5.1. Political Motives

The 'private ends' test has generated considerable scholarly debate and divergent interpretations within the legal community. As previously discussed, significant controversy has emerged from academic efforts to introduce the concept of so-called 'public ends'– also referred to as 'public motives' or 'political motives'– which stand in direct contrast to private ends. The question arises as to whether Houthi attackers might be exempt from the private ends test based on these purported political or public motives. This argument is not tenable under the Convention. The characterization of actions as stemming from political and/or public motives originated with academics seeking to contextualize actions of certain liberation movements during the 1970s and 1980s, but it is not reflected in the Convention's requirements. Moreover, even if such a provision were arguably included, the Houthis insurgents do not qualify as a liberation movement in the technical sense.

The core of this argument creates the 'NSAs versus state sanction' scenario. The private ends' test is intended to differentiate actions taken by NSAs, such as the Houthi rebels, from state sanctioned ones. Some commentators claim that political motives can justify piracy, and that such motives are public rather than private ends.[43] This argument is also unsound. Although political and public motives are sometimes conflated, they differ and are not addressed by the Convention. Public motives involve government-related people or things, while political motives concern government activities or institutions. Scholarly consensus holds that 'private end' means lack of state sponsorship.

43 See Kevin JH, 'Why Political Ends are Public Ends, Not Private Ends' (*Opinio Juris*, 1 March 2013) <https://opiniojuris.org/2013/03/01/a-final-word-about-politically-motivated-piracy/> accessed 15 February 2025.

Additionally, lawful sanction must come from internationally recognised government.[44] Furthermore, actions must be authorised by governments of internationally recognised states.

So, violent NSAs like the Houthis should not be excused based on their political motivations. As previously mentioned, to address the ambiguity surrounding NSAs within the definition of piracy, some academic commentators introduced the concepts of 'political motives' or 'public motives' to justify the actions of liberation organizations. Nevertheless, political objectives pursued by rebel groups, despite not justifying, may also serve as motivation for acts of piracy. For example, Somali piracy arose partly out of political grievances against illegal fishing and the dumping of toxic wastes off the Somali coastline by foreign vessels. Furthermore, the actions of the Ogoni rebels and environmental campaigners [45] in Nigeria, while not strictly piracy, aimed to end the pollution and economic exploitation of their region by their government and multinational oil companies were no excuse. That claim did not spare either from arrests and/or prosecution and execution of their leader, Ken Saro-Wiwa.[46]

Nevertheless, it is noticeable that the Houthis have shown no interest so far in privately profiting from the attacks and, therefore, would not be considered pirates on this count. On the other hand, other commentators argue that *animo furandi* (intention to steal), rather than a feeling of hate or revenge, is an essential element in the private ends test and, therefore, of piracy.[47] However, these arguments are untenable as intention to steal is irrelevant for piracy. On the contrary, as opined above, failure to meet the 'two ships' test, rather than political affiliations, was central to the non-prosecution of those involved in the HMS *Bounty* and the *Santa Maria,* and the acquittal of *Achille Lauro* hijackings. Although NSAs like the Houthis do not fit the typical profile of pirates, nevertheless their actions are non-state sanctioned and are, therefore, still technically piracy.

Under English law, following the repeal of the Ransom Act 1782, ransom payments to pirates for hostages in insurance settlements are legal if made for financial gain and not for political or public motives, regardless of morality or public policy. It is, therefore, for these reasons that piracy is an insurable risk under the UK Marine Insurance Act 1906 (MIA 1906),[48] and ransoms payment therefrom considered legal, in contrast to ransom payment to terrorists and those acting for purely

44 See Aaron Nicholas Honnibal, 'The 'Private Ends' of International Piracy: The Necessity of Legal Clarity in Relation to Violent Political Activists' (2015) International Crime Database Brief n 13, 7.

45 The 'Ogoni rebels' refer to the members of the Movement for the Survival of the Ogoni People (MOSOP), a group of Indigenous Nigerians who fought against oil companies and the Nigerian government to protest environmental degradation, political oppression, and economic exploitation. MOSOP was led by Ken Saro-Wiwa and looked to protect the rights of the Ogoni people, who faced devastating consequences from oil exploration and extraction in their land.

46 Martin Plaut, 'UK and US considered Nigeria naval blockade over Saro-Wiwa execution' (*BBC News*, 31 December 2019) <www.bbc.com/news/world-africa-50892306> accessed 12 February 2025.

47 Mazyar Ahmad, 'Maritime piracy operations: Some legal issues' (2020) 4 Journal of International Maritime Law 3, 62-69.

48 *MIA 1906*, Section 3. Although a UK national legislation, this Act is unique and followed not only in all common jurisdictions but including in most, if not civil law jurisdictions, too.

political motives. While this argument is persuasive, it does not contradict or supersede the principle of state-sanctioned acts. Neither does the claim to be acting for public motives.

2.1.5.2. Public Motives

Regarding political motives, it is important to differentiate between public objectives and private interests when considering the definition of piracy.[49] Until the *Greenbeard* and the *Sea Shepherd* cases, there were no definitive clarifications on the question. However, as early as 1901, the English Court of Appeal in *Republic of Bolivia v. Indemnity Mutual Marine Assurance Association*[50] had already grappled with the 'private gain' element (the equivalent of 'private ends') by distinguishing the business, commercial, and legal meanings of piracy within the insurance context. Dismissing the appeal from the King's Bench, Lord Justice Kennedy noted that:

> 'The learned judge in this case, --, has asked himself what "piracy" meant in this policy, and he has given it a meaning which clearly does not bring that which happened within the meaning of the term. To my mind the term "piracy" is inapplicable to the acts of the persons who seized the goods insured in this case, however wrongful or lawless their conduct may have been according to the law of Brazil or Bolivia. They seized these goods not for their private gain, but in furtherance of a political adventure in the latter country. I do not think that any businessperson would say that those acts formed 'piracy' in the sense in which that term is used in this policy'[51]

Although his reasoning is *prima facie* sound, Justice Kennedy equates political adventures with political motives, the very antithesis of private ends. Nevertheless, it is from treaty law – and not from judicial interpretations such as in this case – that the principle arises: state-sanctioned actions are not piracy, whereas those of NSAs are. In any case, this observation was *an obiter dictum* of an English judge, cited here solely for comparative purposes and not as a reflection of international customary law. For these reasons it is arguable that, outside the *Greenbeard* and the *Sea Shepherd* precedents, the Houthis qualify as pirates under the treaty's 'private ends' test.

The counterpoint suggests that, apart from the views held by the *Greenbeard* and the *Sea Shepherd* regarding animosity and retribution, political motives should exempt the Houthis and their

---

49 UNCLOS (n 12) article 101(a).

50 *Republic of Bolivia v. Indemnity Mutual Marine Assurance Company, Limited* [1909] 1 K.B. 785.

51 ibid, 804.

leaders from liability. However, due to the Houthis' NSA status, such views are considered inaccurate. Based on precedents set by the *Greenbeard* and *Seashepherd* cases, as well as the involvement of groups like the *HMS Bounty*, *Santa Maria,* and *Achille Lauro* activists, convictions would still occur. The limited *ratio decidendi* for acquittal in these examples is attributed to the absence of the two ships' tests, rather than political considerations. This article asserts that the drafters and negotiators of the Geneva Convention and UNCLOS, by emphasising private ends, likely intended to exempt only state-sanctioned actions while excluding other types of actors and motives, including those that are political or public in nature.

So, any claims by the Houthi NSAs based on being a politically organised group (POG),[52] holding territory, having a military force and being an armed organised group (OAGs)[53] with an effective an administration acting for public or political motives are untenable. For the purposes of exemption from piracy, state sanction applies only to state-owned and state-operated vessels under the authority of lawful and internationally recognised governments. Mere control of territory or the appearance of governmental authority is insufficient to escape the 'private ends' test and, therefore, the definition of piracy. This was also the pattern of the discredited political and public motives' claims by the rebels in the *Republic of Bolivia* and, the *Santa Maria* and the *Achille Lauro*.

Furthermore, the Houthis' principal motives and target selection appear, at best, random. Although they have claimed to target vessels beneficially owned by Israeli interests, it is doubtful that all of the attacked ships were sailing from, bound for, or otherwise connected with Israel as alleged. Furthermore, apart from releasing the *Galaxy Leader* and her 25-member crew, it is still uncertain what they plan to do with several ships and crew they still hold. Following the Anglo-American bombing of their bases, they now consider all US and UK ships legitimate targets. In addition, they have extended their actions to non-maritime targets and are conducting drone and missile attacks on Israel. Those actions put them in the realms of armed combatants under international law, outside the protection of piracy laws, and the remit of this article.

Sixth, and finally, there must be intention to facilitate the piracy by onshore and backroom (passive) pirates. This raises a rarely examined issue – an uncharted test arising from the third piracy

52 A POG is a political organization engaged in political activities (e.g., lobbying, community organizing, campaign advertising, etc.) aimed at achieving clearly defined political goals, which typically benefit the interests of their members. Some POGS, like the Houthis, also have military wings involved in violence.

53 An OAG is a non-state party's (such as POGS) military or armed wing in a non-international armed conflict. Although not part of international treaties, they are required to: follow the basic rules of war; respect IHL principle that the state they operate in has consented to and communicate with the parties to a conflict. See generally Jann K. Kleffner,'The applicability of international humanitarian law to organized armed groups' (2011) 98 International Review of the Red Cross 882, 1-19.

offence noted above – namely, whether the Houthi leadership and their masterminds could also be held liable for inciting or intentionally facilitating acts of piracy.

2.1.6 The 'Inciting and Intentional Facilitation' Test.

As outlined above, this is the third piracy offence ('Piracy 3').[54] It should also be noted that the phrase 'on the high seas' appears only in the first and second piracy offences, which address offshore and frontline ('active') pirates, and is not a requirement for the third offence, which targets shore-based or behind-the-scenes ('passive') actors.[55] However, even if the Houthi 'active pirate' attackers were, in the unlikely event, to satisfy the private ends test, it is arguable that their masterminds, financiers, and other key actors could still be liable for the distinct offence of incitement and intentional facilitation of piracy.[56]

Incitement and intentional facilitation accelerate the occurrence of violence, detention, or deprivation on the high seas. They, therefore, constitute piracy, even though the phrase 'on the high seas' is omitted from the UNCLOS definition. Consequently, such acts fall under universal jurisdiction, and their perpetrators may be held accountable in any forum, irrespective of their physical presence on the high seas. However, would this include the Iranians and any other Houthi *passive pirate*s as compared to the *active pirates*? Furthermore, could the Iranian backers hide behind state immunity and/or state-sanctioned piracy defence? These are some of the grey areas that the Houthi attacks throw out.

Given that for *passive piracy* the suspect and/or accused and their remote controllers cannot be physically present and *active,* it is arguable that a narrow interpretation of the clause, requiring private ends for actions,[57] would excuse the Houthi backers. However, a wider interpretation of the clause includes only the private ends' requirements under Articles 101(a) through to 101(b) rather than the suggested wider political motives and would qualify Houthi's backers as pirates. For these reasons, a leading Somali piracy mastermind, the *Big Mouth,*[58] would have been convicted by the Belgian Court for intentional facilitation, *inter alia,* had it not been for lack of evidence. Instead, there was evidence to convict him of *active piracy*, having also taken part earlier in the hijacking of a

54 UNCLOS (n 12) article 101(c); Geneva Convention (n 25) article 15(1).

55 See Jonathan Bellish, 'A High Seas Requirement for Inciters and Intentional Facilitators of *Piracy Jure Gentium* and Its (Lack of) Implications for Impunity' (2013) 15 San Diego International Law Journal, 115-162.

56 UNCLOS (n 12) article 101(c);

57 UNCLOS (n 12) article 101(a) and article 101(b).

58 *Belgium v Mohammed Abdi Hassan and Mohamed Aden Tiiceey* (2016) Bruges Criminal Court; see Ademuni-Odeke: 'Challenges of apprehending and prosecuting Somali pirate leaders and financial backers: the Big Mouth case'(2023) 29 Journal of International Maritime Law 3, 165-184; see also Ademuni-Odeke: 'Culpability of Somali Piracy Facilitators and Ransom Dealers Under UNCLOS and International Law' (2025) Journal of International Maritime Law, vol 30, issue 4.

Belgian vessel, the *Pompeii*.

Consequently, a further hurdle in this scenario is whether Iran could plead state sanction and sovereign state immunity defences, including for her accomplices. Otherwise, the Houthi attacks are undoubtedly piracy albeit only technically. However, the Houthi attacks occurring within Yemeni territorial seas would constitute ARAS and SUA offences (see below), rather than piracy. To address the lacuna created by limiting piracy to the high seas and ABNJ under Article 15 of the Geneva Convention and Article 101 of UNCLOS, a separate ARAS offence was established to include piracy-related acts committed within a state's jurisdiction.

2.2. Armed Robbery Against Ships

So, if not culpable for piracy on account of the geographic scope test, could the Houthis be culpable for ARAS? Under international customary law, piracy could be committed broadly anywhere and from any onshore or offshore source. Its narrowing by the 1958 and 1982 codifications created a lacuna giving rise to ARAS.

Introduced by the IMO in 2010, ARAS consists of:

> '(a) any illegal act of violence or detention or any act of depredation, or threat thereof, other than an act of piracy, committed for private ends and directed against a ship or against persons or property on board such a ship, within a State's internal waters, archipelagic waters and territorial sea;
>
> (b) any act of inciting or of intentionally facilitating an act described above'[59]

ARAS' definition is identical to that of piracy,[60] save for the emphasised texts. Piracy takes place on the high seas while ARAS takes place in internal waters, archipelagic waters and territorial seas which are under the jurisdiction of the coastal states. Although also involving violent attack and private ends, ARAS is more of a robbery. The distinction between piracy and ARAS is, therefore, a technical one that depends on where the act was perpetrated. Without ARAS, offences inward of the high seas and ABNJ would not be prosecutable. This is more so given that Houthi attacks occurring within Yemen's TS are subject to domestic laws. The intention to rob is central to ARAS, although irrelevant for piracy. Under Part II of UNCLOS, primary responsibility for ARAS enforcement nor-

59 IMO, Code of Practice for the Investigation Crimes of Piracy and Armed Robbery Against Ships, Para 2.2 of the Annex to the 26th Session of the IMO General Assembly Resolution (A 26/Res.1025), 18 January 2010, (Agenda item 10), adopted on 2 December 2009.

60 UNCLOS (n 12) articles 101(a) and 101(b).

mally falls on the coastal state.

In recent years, armed robbery and piracy have been most prevalent in Southeast Asia, the Horn of Africa, the Caribbean, and the Gulf of Guinea. That said, there is no evidence that any of the current Houthi attacks have taken place within Yemeni territorial seas. ARAS is also an offence under the SUA Convention, which is not constrained by geographical distinctions and, in some cases, under the *United Nations Convention against Transnational Organized Crime* 2000.[61] However, as with piracy, the consequences of Houthi attacks constituting ARAS include kidnapping, injury, assault, death, threats, missing crew, and damage – particularly through the use of WMD or the intentional destruction of equipment and property – all of which fall within the scope of maritime security.

Secondly, because ARAS falls under national jurisdiction, it is inconceivable that Iranian backers or the Houthi leadership would apprehend and prosecute their own conspirators, whether in their own courts or in Yemen's. Thus, although the ARAS criteria are technically satisfied, without apprehension and prosecution, the offence offers neither a practical remedy nor consolation for past, present, and future victims.

Despite this, Houthi attacks pose a broader maritime security risk under the SUA Convention rather than being classified as simply piracy or ARAS.

3. The Houthi Attacks as SUA Maritime Security Offences

3.2. The Attacks as SUA Offences

3.2.1. General Overview

The SUA Convention facilitates the suppression of unlawful acts, such as those by the Houthis, which threaten the safety of ships and their passengers and crews in Article 3 thereof. Adopted to address the two ships' requirement, the Convention primarily ensures proper action is taken against persons committing unlawful acts against ships, the keywords being 'appropriate action.' The offences covered by the Convention are primarily related to maritime security.[62] The 2005 SUA Protocol introduced Article 3bis, which reinforces provisions against the seizure or exercise of control over a ship by force, threats, or intimidation. It also extends to acts of violence against persons on board and

61 United Nations Convention against Transnational Organized Crime [2000] UNTS No.2225.

62 Found in Article 3 and 3bis SUA Convention (n 11).

the use of explosive devices capable of causing destruction or damage.

Additionally, the Protocol criminalises the communication of false information (a cyber-related offence) that endangers the safety of a ship, as well as the use of weapons or threats of force against ships and acts of terrorism. These include the forcible seizure of ships, violence against persons on board, and the placement of destructive or damaging devices on vessels. It further addresses maritime terrorism by criminalising conduct intended to intimidate a population or influence a government through the use of harmful substances (WMD) or violent acts at sea. These are precisely the types of deeds currently being carried out by the Houthis.

Those provisions are wide enough to cover current Houthi attacks, the remaining problem being that of apprehension, jurisdiction,[63] extradition of the perpetrator[64] and the willingness of state parties to assist each other.[65] Yemen, all states in the Gulf of Aden region (except Eritrea, Ethiopia, and Somalia), and states with navies running off the Somali coast are parties to the SUA Convention. This means that Houthi attackers can be prosecuted in Yemeni courts for those offences. However, there are no reported cases to date of such action under the Convention, which is hardly surprising given the practical difficulties of extradition, especially in Articles 11 and 12 of the Convention. Apprehending and prosecuting Somali pirates—let alone their masterminds and financiers—proved difficult even under the comparatively straightforward provisions of UNCLOS. The challenge is far greater with the heavily protected Houthi operators, who operate in a lawless and hostile environment.

Moreover, potential violations of SUA offences, particularly maritime terrorism, are areas where Houthi involvement may be considered.

3.2.2. The Attacks as Maritime Terrorism.

In addition to their accountability for piracy, ARAS and other SUA offences, the Houthi acts are maritime terrorism. Under Article 3 and 3bis of the Convention, this offence consists of terrorist acts and activities within the maritime environment, using or against vessels or fixed platforms at sea or in port, or against any one of their passengers or personnel, against coastal facilities or settlements, including tourist resorts, port areas and port towns or cities. This fits in with the Houthi drone and

63 SUA Convention (n 11) Article 6 outlines jurisdiction of State Parties over certain offenses committed against ships or within their territory.

64 SUA Convention (n 11) article 11 outlines the process of extradition for offenses listed in Article 3/3bis, including those like hijacking, violence on board a ship, or damage to a ship.

65 SUA Convention (n 11) article 12 outlines the obligations of State Parties to assist each other in criminal proceedings related to the offenses defined in Article 3/3bis SUA Convention.

missile attacks. It is geopolitical in nature and not constrained by the private ends or high seas' requirements, whether the attacks are under SUA, the amended International Convention for the Safety of Life at Sea (SOLAS), 1974[66] or related terrorism conventions.[67] The International Ship and Port Facility Security Code (ISPS Code) and SOLAS Chapter XI-2[68] (SOLAS Amendments) are part of a wider global effort to counter terrorism, including initiatives by the UN, the World Customs Organization (WCO), and the International Labour Organization (ILO).

Although the Houthi attacks are in a region with histories of maritime terrorism, the recent origin of anti-terrorism legislation is the 11th of September 2011 attacks in the US which, although non-maritime, underscored the devastating effects of global terrorism. The specific origin of maritime terrorism is often traced to the al-Qaeda attack on the *USS Cole* in 2000 while it was refuelling in the Port of Aden, Yemen, which killed seventeen sailors and crippled the vessel. The *USS Cole* incident closely resembles the current Houthi *modus operandi*, which involves deploying an array of sophisticated weapons – including, but not limited to, ballistic missiles and "kamikaze" drones – against shipping. The Houthi attacks thus constitute clear acts of maritime terrorism, the principal difficulty lying in the apprehension and prosecution of the perpetrators.

Additionally, the Houthi use of explosives and other sophisticated weapons amounts to deployment of WMD, a more violent SUA offence of maritime terrorism.

3.2.3 Effects of the Use of Weapons of Mass Destruction

Before the Houthi entrance into the foray, similar attacks on shipping had included the *USS Cole* and suicide bombers ramming an explosives-laden dinghy into the starboard side of the *MV Limburg* in 2002, 3 km off the port of Al-Bashir, in the Gulf of Aden in Yemeni TS, causing extensive fire damage and spilling 90,000 litres of crude oil; the *MV SuperFerry 14*, a Philippine registered Roll-on-Roll-Off (RORO), attacked in Manila Bay in 2004 by the Abu Sayyaf terrorist operatives planting explosives, resulting in the ferry's destruction and the deaths of 116 people in the Philippines' deadliest terrorist attack; and the *M Star*, a Japanese Very Large Crude Carrier (VLCC) damaged by an explosion in 2010 in Omani TS west of the Strait of Hormuz, suffering hull damage, with evidence of an attack from external sources.

66 International Convention for the Safety of Life at Sea (SOLAS) (adopted 1 November 1974, entered into force 25 May 1980) UNTC No.18961.

67 For example International Convention Against the Taking of Hostages (adopted 17 December 1979, entered into force, 3 June 1983) UNTS 21931; International Convention for the Suppression of Terrorist (adopted 25 November 1997, entered into force 23 May 2001) A/RES/52/164; and International Convention for the Suppression of the Financing of Terrorism (adopted 9 December 1999, New York, entered into force 10 April 2002) UNTS n 38349.

68 The International Ship and Port Facility Security Code (ISPS Code) and SOLAS (n 66) Chapter XI- 2 entered into force 1 July 2004.

In addition to speed boats, also popular with Somali pirates, the Houthis use missiles, “kamikaze” drones, and manned (suicide) or unmanned boats loaded with explosives. Fortunately, and despite the fear thereof following the collapse of the Soviet Union, terrorist use of ‘dirty bombs’[69] have not materialised, the Houthi attacks being the closest involvement of WMD use at sea to date.[70] Although the full extent of the Houthis’ arsenal remains uncertain, the scope and usage of the term ‘WMD’ in relation to their weaponry has evolved. Accordingly, individuals and groups such as the Houthis—as well as those providing aid, funding, or technology to WMD programmes—may be held accountable for WMD-related activities. However, in addition to the lack of prosecution under the Convention so far, there are poor extradition prospects due to its complex proceedings under the Convention[71] and the lack of cooperation in this case from the Houthis and Iranians.

That said, the actions of OAGs, POGs, and armed combatant NSAs in wartime fall within the scope of the laws of war. This article, however, is confined to attacks on shipping in peacetime; detailed consideration of NSA culpability in naval warfare and other armed conflict situations lies beyond its remit. The remainder of this article will, therefore, focus on cybersecurity, marine pollution, and the prospects of future attacks.

3.2.4. Cyber Attacks and Other Maritime Security

3.2.4.1. Cyber Security Considerations

Of the remaining aspects of maritime security, there is no recorded evidence that the Houthis are engaged in: illicit trafficking of goods or people; narcotics trafficking; illegal, unreported, and unregulated fishing (IUU)F; or maritime cyber activities connected to their attacks on shipping.

However, while the Houthis have not explicitly focused on cyber-attacks, their increased maritime activity, misinformation, and the use of advanced technologies create a broader threat landscape where cybersecurity is a growing concern.[72] Other cybersecurity concerns include spyware attribut-

69 A ‘Dirty Bomb,’ or radiological dispersion device, is a bomb that combines conventional explosives, such as dynamite, with radioactive materials in the solid, liquid, or gaseous form. It is intended to disperse radioactive material into a small, localized area around an explosion.

70 Pursuant to Article 3bis SUA Convention (n 66) and its 1988 and 2005 Protocols, a WMD is a biological, chemical, radiological, nuclear, or any other weapon that can kill or significantly harm many people or cause great damage to artificial structures (e.g., buildings), natural structures (e.g., mountains), or the biosphere.

71 SUA Convention (n 66) article 11.

72 Angela, ‘The resumption of Houthi attacks: Implications for maritime security and how technology can help navigate new risks’ (*Concirrus,* 1 October 2024) <https://concirrus.ai/houthi-attacks-implications-for-maritime-security-and-how-technology-can-help/> accessed 20 February 2025.

ed to pro-Houthi hackers, which has been used against Middle Eastern militaries and could be redirected toward attacks on ships. Such cyber-attacks could disrupt communication and navigation systems, or even target critical maritime infrastructure, with serious implications for maritime security.

Pollution of the marine environment is another major maritime security concern. The damage to, and sinking of, the *Rubymar* (a Belize-flagged vessel), the *Tutor* (a Greek-owned coal carrier), the *Magic Seas*, and the *Eternity C,* both Liberian registered (see below), have resulted in chemical and oil spills, which illustrate the threat to the marine environment.

3.2.4.2. Marine Pollution

The attacks have led to vessels sinking and releasing fuel, their cargo, and other polluting materials into the water, posing not only maritime security risks but also threatening the marine ecosystem and coastal communities. The sinking of the *Rubymar* in March 2024, after a Houthi attack a month earlier, resulted in a 30-km oil slick and the release of thousands of tons of fertilizer, posing significant environmental risks. This was the first vessel sunk in the Houthi attacks, having been struck by missiles in the Gulf of Aden. The attack caused fuel and fertilizer leakages, creating a large oil slick and threatening the Red Sea's delicate ecosystem. The second victim was the *Tutor*, a Greek-owned coal carrier also sunk by the Houthis, after being hit by missiles and a remote-controlled boat in June 2024, killing a Filipino crew member.

These sinkings raise concerns about potential pollution and damage to the marine environment, including the risk of oil slicks, algal blooms, and the creation of 'dead zones'.[73] The *Magic Seas* carrying iron and fertilizer was sunk by Houthis in the Red Sea, on 6 July 2025 followed by the sinking on 8 July 2025, of the *Eternity C*, another Liberian-flagged, Greek-operated cargo ship.[74] The latter was hit by rocket propelled grenades (RPGs) and sea drones in the Red Sea, resulting in the death of 4 seafarers and the kidnapping of the survivors.[75] She was in ballast having just delivered her cargo of iron and fertilizer.

The sinking of these ships raised immediate concerns about potential environmental damage and pollution in the critical Red Sea maritime corridor. The IMO highlighted the risk of pollution and

---

73 'Dead zones' also known as hypoxic zones, are areas in the world's oceans and large lakes where low oxygen levels make it difficult or impossible for marine life to survive. These zones are caused primarily by nutrient pollution from sources like fertilizers and sewage runoff, which leads to algal blooms that deplete oxygen when they decompose.

74 David Gritten, 'Search for survivors after Houthis sink second Red Sea cargo ship in a week' (BBC News, 9 July 2025) <www.msn.com/en-us/news/world/search-for-survivors-after-houthis-sink-red-sea-cargo-ship/ar-AA1IhsWW> accessed 15 July 2025.

75 ibid; William Christou, 'Seafarers from cargo ship attacked by Houthis rescued after 48 hours in water' (10 July 2025) The Guardian.

harm to seafarers from such attacks.

The potential for further pollution from damaged ships and the rerouting of vessels around the Cape of Good Hope is also a concern. The resultant security threats are threefold. First, there is the threat to marine ecosystems, given that the Red Sea hosts diverse marine life, including coral reefs, which are particularly vulnerable to pollution. Oil spills and other contaminants can damage these ecosystems, thereby undermining biodiversity and the livelihoods of coastal communities dependent on fishing and other marine resources. Secondly, there are long-term impacts: the Houthi attacks, together with the diversion of ships around the Cape of Good Hope, have resulted in higher emissions from significantly longer routes and increased exposure to accidents and spills in vital shipping lanes.

Thus, the environmental risks associated with the Houthi attacks constitute a concern not only for the Red Sea region but also for the wider global maritime trade network, as such disruptions generate commercial risks, including increased insurance premiums, tariffs, additional costs, and delays.

4. Future Prospects of Attacks

Unlike Somali piracy, which was not underpinned by broader related issues, the Houthi attacks are rooted in multiple national and regional conflicts, as well as wider geopolitical dynamics. The attacks appear to constitute only a symptom of these underlying causes.[76] Whereas the former was addressed through UNCLOS-based legal mechanisms, the latter cannot be resolved in the same manner. A solution to the Houthi attacks would require a Somali-type strategy founded on an international legal framework. However, owing to the international community's reluctance to replicate the Somali experience, alternative measures have thus far proved disappointing.

First, the US, Israeli and British response in attacking Houthi targets, citing self-defence based on the *UNSCR* 2722/2024, is an attempted military solution that lacks universal backing. Unlike earlier UNSCRs adopted since 2008[77]– which authorised foreign naval missions to employ "all necessary means to repress acts of piracy and armed robbery," including intervention in Somali territorial waters to provide convoy escorts, pursue, intercept, seize, and arrest pirates – the current UNSCRs merely condemn the Houthi attacks without expressly conferring a legal mandate on Member States

76 See Jonah Carlson, 'Houthi Motivations driving the Red Sea crisis: understanding how Ansar Allah's strategic culture goes beyond Gaza and Iran' (2024) 15 Journal of Advanced Military Studies 2.

77 UNSC Resolution 1816 (2008).

to undertake military action against them.[78] This is despite the fact that the Houthi attacks have caused damage to maritime security comparable to that inflicted by Somali piracy, which necessitated – and received – effective UNSC intervention and unequivocal international cooperation. There is, therefore, a pressing need for a similar UN-led concerted response.[79]

The continued inaction of the UN and the international community in response to the attacks is, therefore, striking, with the probable rationale being the uncertainty as to whether such attacks constitute piracy. From this inaction, it may reasonably be inferred that the UNSC does not yet consider the crisis sufficiently grave to threaten international peace and security so as to warrant the invocation of Part VII of the UN Charter, as was the case with Somali piracy. Nevertheless, preventing the ongoing threats to maritime security and the resulting harm to shipping and global trade requires comprehensive and effective UNSC authorisation for a new legally grounded collective action.[80] The Houthis and their backers are more likely to take note of a robust and unified UN-led response. Although they had promised to limit their attacks to Israeli interests following the short-lived Israeli-Gaza ceasefire,[81] no guarantees were given.

Secondly, diplomatic efforts have also stalled in resolving the Houthi insurgency and its associated regional conflicts (distinct from the Gaza conflict), as well as the broader Israeli–Gaza confrontation.

Finally, the involvement of the UNSC has been insufficient. Instead *UNSCR* 2722/2024, *UNSCR* 2722/2024,[82] *UNSCR* 2739/2024,[83] *UNSCR* 2768/2025[84] and *UNSCR 2787*[85] merely noted the imperative to emphasize, 'the need to address the root causes, including the conflicts contributing to regional

78 See also UNSC Resolution 2216 (2015) and UNSC Resolution 2624 (2022) and prior UNSCRs referred to therein; cf. Zoran Kusovac, 'Analysis: In the Red Sea, the US has no good options against the Houthis' (*Aljazeera News*, 27 December 2023) <www.aljazeera.com/news/2023/12/27/analysis-in-the-red-sea-the-us-has-no-good-options-against-the-houthis> accessed 20 March 2025.

79 Charlotte Kleberg, 'The Search for a High Seas Solution,' A Commentary (*RAND*, 17 January2024) <www.rand.org/pubs/commentary/2024/01/the-search-for-a-high-seas-solution.html> accessed 20 March 2025.

80 See Nadwa Al-Dawsari, Casey Coombs, Ibrahim Jalal, Kenneth M. Pollack, Baraa Shiban andKatherine Zimmerman, 'Ending the Houthi Threat to Red Sea Shipping' (*American Enterprise Institute*,1 February 2024) <www.jstor.org/stable/resrep58032> accessed 20 March 2025.

81 See Jonathan Saul"Yemen's Houthis to target only Israel-linked vessels following Gaza deal" (*Reuters,* 20 January 2025) <www.reuters.com/world/middle-east/yemens-houthis-will-target-only-israel-linked-vessels-after-gaza-ceasefire-says-2025-01-20/> accessed 20 March 2025.

82 Adopted by the Security Council at its 9527th meeting, on 10 January 2024; Prior Resolutions 2216/2015, 2014/2011, 2051/2012, 2140/2014, 2201/2015, and 2204 (2015) and presidential statements of 15 February 2013, 29 August 2014, and 22 March 2015, concerned the security situation in Yemen, not the latter attacks on shipping.

83 Adopted by the Security Council at its 9672nd meeting, 27 June 2024.

84 Adopted by the Security Council at its 9836th meeting, 15 January 2025.

85 Adopted by the UN Security Council at its 9958th meeting, 15 July 2025.

tensions and the disruption of maritime security in order to ensure a prompt, efficient, and effective response'[86] and urged 'caution and restraint to avoid further escalation of the situation in the Red Sea and the broader region, and encourages enhanced diplomatic efforts by all parties to that end, including continued support for dialogue on the root causes of the Houthi attacks under UN auspices'.[87]

Although *UNSCR* 2768 (2025) for the first time reaffirmed the need to address the root causes of these attacks, it merely reiterated its condemnation of the Houthi actions and of the conflicts contributing to regional tensions and the disruption of maritime security, without providing for a prompt, efficient, and effective response.[88] None of the 5 UNSCRs refer to piracy and ARAS. The UNSC actions simply seem to be going through a routine process.

Although the Council also acknowledged the use of WMD-like advanced weaponry in the Houthi attacks and demanded that Member States cease supplying arms to the Houthis, it merely re-emphasised the need to address the underlying causes of these attacks.[89] The *UNSCR* 2277/2024 had already urged caution and restraint to avoid further escalation of the situation in the Red Sea and the broader region.

The Houthi actions have already crossed the red line of constituting a threat to international peace and security, thereby necessitating the invocation of Part VII of the UN Charter, which empowers the UNSC to take coercive measures in response to threats to the peace, breaches of the peace, and acts of aggression, as it did in the case of Somali piracy. The disruption of shipping and global trade poses risks to all nations and, therefore, calls for a collective international response similar to that adopted against Somali piracy. Following that precedent, a robust UNSCR would provide the legal legitimacy and mandate for Member States and regional organisations to act, particularly under Articles 100 (duty to cooperate in the repression of piracy), 105 (seizure of a pirate ship or aircraft), 110 (right of visit), and 111 (right of hot pursuit) of UNCLOS.

Such measures would enable the provision of naval and aerial patrols and escorts, the exercise of rights of visit, the arrest of suspects, and their prosecution, whether directly or through piracy transfer agreements. It would also reaffirm the freedom of the high seas and navigation[90] and the rights of innocent passage,[91] curb the attacks, reopen the Suez Canal route, reduce shipping costs, and prevent marine pollution.

86 UNSC Resolution 2272 (2024), para. 7.

87 ibid, para. 9.

88 ibid, para. 3.

89 ibid, para. 4.

90 ibid, article 90.

91 ibid, Part II, Section 2.

5. Concluding Remarks

The Houthi attacks constitute a maritime security concern under UNCLOS, the SUA Convention, and the general principles of international law. Although unusual in character, they qualify as ARAS when conducted within Yemeni territorial seas; as piracy as far as they are not state-sanctioned; as maritime terrorism; as the use of WMD-like weaponry; and as a source of marine environmental pollution. Accordingly, they amount to a threat to maritime and global security within the meaning of *UNSCR 2768*, which recognised 'the importance of maritime security and [that] the maintenance of maritime security in the region of the Red Sea is essential for the stability of global supply chains and economic development'.[92] The attacks have not only re-energised Somali piracy but could also potentially encourage international organized criminality and other opportunistic actors.

Against that backdrop, a concerted, united international effort, as prescribed above, remains the only viable solution through the UNSC. A similarly unified approach, backed by broad international support, once led to the assembly of the largest naval force ever deployed in either war or peacetime and proved decisive in the fight against Somali piracy. Absent such action, what began as a form of economic warfare aimed at pressuring Israel could produce unintended consequences for maritime and global security in an already volatile region.

The attacks demonstrate the Houthis' capacity, as NSAs, to challenge global norms and exert economic pressure; they have contributed to regional instability by heightening tensions and risking further escalation; and they carry global security implications by raising questions about the ability of non-state actors to disrupt international trade and about the role of major powers in maintaining maritime order.[93]

The attacks, which are expected to continue even if a Gaza ceasefire is achieved, underscore a persistent challenge to global trade, the marine environment and maritime security, necessitating a continued urgent need for a united international response and shift towards diplomatic solutions involving the United Nations, major maritime nations and key regional actors.

92 ibid, *Preamble* 4.

93 See Febrina Estika, Hikmat Zakky Almubaroq and Ari Pitoyo Sumarno, 'Red Sea War: How the Houthi onslaught affected the security of the state' (2024) 3 East Asian Journal of Multidisciplinary Research 12, Vol. 35861-5870.

Maritime Safety
and Security Law Journal

Law of the Sea and Climate Action: Rethinking Marine Geoengineering Governance

*Adelaide Francesca Daniela LUMINARI**

Abstract

On 21st May 2024, the International Tribunal for the Law of the Sea (ITLOS) issued its first advisory opinion on climate change, clarifying States' obligations under the United Nations Convention on the Law of the Sea (UNCLOS) but offering limited guidance on marine geoengineering – an increasingly relevant set of ocean-based interventions for carbon dioxide removal (CDR).

As concerns grow that emission reductions alone may be insufficient to meet the Paris Agreement goals, ocean-based CDR techniques such as ocean fertilization and alkalinization are attracting growing interest, yet they remain largely unregulated under binding international law.

Until now research on ocean-related CDR proposals concentrated its attention on the possible application of UNCLOS, the 1972 London Convention on the prevention of marine pollution by dumping of wastes, the 1996 Protocol to the Convention and its amendments.

This article examines these instruments arguing that their sectoral scope and risk-averse orientation provide only a limited foundation for governing marine geoengineering. It then considers the Agreement on Marine Biodiversity of Areas Beyond National Jurisdiction (BBNJ), not merely as a gap-filling tool but as a framework offering complementary procedural and institutional mechanisms that could support the effective governance of further research and implementation of CDR projects in areas beyond national jurisdiction.

The article argues that international law should evolve to ensure that marine geoengineering is regulated in a way that supports both ocean protection and climate mitigation, while fostering transparency, scientific integrity, knowledge pluralism, and advancing systemic integration between the law of the sea and the climate regime.

Keywords: marine geoengineering; carbon dioxide removal; marine pollution; climate change mitigation; BBNJ Agreement.

First published online: 6 February 2026

1. Introduction

On 21st May 2024, the International Tribunal for the Law of the Sea (ITLOS) issued an advisory

* Adelaide Francesca Daniela Luminari is a PhD candidate in International Law at the *European University of Rome*. She holds law degrees from *Dublin Business School* and the *European University of Rome*, and postgraduate degrees in International Relations and Human Rights from LUMSA University of Rome and University College Dublin.

opinion on climate change,[1] clarifying states' obligations under the United Nations Convention on the Law of the Sea (UNCLOS) regarding climate change mitigation.[2] Despite broad participation in the proceedings, marine geoengineering was only cursorily addressed.[3] The opinion briefly referenced Article 195 UNCLOS –cautioning that marine geoengineering 'would be contrary […] if it has the consequence of transforming one type of pollution into another' – but did not delve deeper into its applicability, thereby underscoring the legal ambiguity surrounding these novel activities.[4]

The Intergovernmental Panel on Climate Change (IPCC) has made clear that limiting the global average temperature increase to 'well below' 2°C above pre-industrial levels, as envisaged in the 2015 Paris Agreement,[5] requires rapid and deep reductions in greenhouse gas emissions across all sectors. In addition, the IPCC underlines that most mitigation pathways consistent with this goal rely on some degree of carbon dioxide removal (CDR), primarily to counterbalance hard-to-abate residual emissions.[6] The importance of CDR has also been acknowledged in international climate negotiations, most recently in the outcome of the first Global Stocktake adopted at COP28, which refers to 'abatement and removal technologies such as carbon capture and utilization and storage, particularly in hard-to-abate sectors'.[7] Land-based CDR methods have been the primary focus.[8] While these methods are technically viable, they pose significant challenges, particularly due to their high land and resource demands, which can create conflicts with other land uses and limit large-scale implementation.[9]

These constraints have driven increasing interest in exploring ocean-based approaches for

---

1 *Request for Advisory Opinion submitted by the Commission of Small Island States on Climate Change and International Law* (Advisory Opinion, 21 May 2024) C31 [231], ITLOS Reports 2024 (ITLOS Advisory Opinion).

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

3 Romany M Webb, 'The ITLOS Advisory Opinion and Marine Geoengineering: More Questions, Few Answers' (*Verfassungsblog*, 25 May 2024) <https://verfassungsblog.de/the-itlos-advisory-opinion-and-marine-geoengineering/> accessed 5 March 2025.

4 ITLOS Advisory Opinion (n 1) para 231: '[…] The Tribunal is aware that marine geoengineering has been the subject of discussions and regulations in various fora, including the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matters 1972 and its 1996 Protocol, and the CBD'.

5 Paris Agreement (adopted 12 December 2015, entered into force 4 November 2016) 3156 UNTS 79 art 2(1)(a).

6 Jim Skea and others (eds), 'Summary for Policymakers' in IPCC, *Climate Change 2022: Mitigation of Climate Change* (CUP 2022), 16-18.

7 UNFCCC 'Outcome of the First Global Stocktake' (13 December 2023) Decision -/CMA.5 FCCC/PA/CMA/2023/L.17, para 28(e).

8 National Academies of Sciences, Engineering, and Medicine (NASEM), *Negative Emissions Technologies and Reliable Sequestration: A Research Agenda* (The National Academies Press 2019).

9 Kate Dooley and others, 'Over-reliance on Land for Carbon Dioxide Removal in Net-zero Climate Pledges' [2024] Nature Communications 1; Xin Zhao and others, 'Trade-offs in Land-based Carbon Removal Measures under 1.5 °C and 2 °C Futures' [2024] Nature Communications 1.

carbon dioxide removal, such as ocean alkalinity enhancement and seaweed cultivation. While these techniques build on the ocean's natural capacity to absorb CO_2, they also introduce novel ecological risks and regulatory challenges due to limited scientific understanding and the absence of governance frameworks.[10] In recent years, the role of the ocean in climate policy has gained prominence in international climate discussions,[11] including in the context of the Conferences of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC).[12] These discussions have rightly emphasized the protection and restoration of marine ecosystems as natural carbon sinks, particularly in the context of nature-based solutions for climate adaptation. However, this political focus on conservation also provides the essential backdrop for the urgent, and separate, debate on technological interventions like marine CDR (mCDR) for the purpose of mitigation.[13]

This paper argues that while existing ocean law instruments such as UNCLOS and the London Convention and Protocol provide important principles,[14] their sectoral focus on preventing pollution renders them limited in their capacity to govern marine carbon dioxide removal in a way that accounts for both ecological risks and potential climate benefits. [15] By contrast, the BBNJ Agreement, although not expressly designed to regulate geoengineering, introduces procedural innovations that could bridge this gap by embedding more detailed and participatory approaches to transparency, environmental impact assessment, and cross-regime coordination into decision-making, thereby moving toward a strengthened systemic integration of ocean and climate governance.[16]

10 Martin Johnson and others, 'Can Coastal and Marine Carbon Dioxide Removal Help to Close the Emissions Gap? Scientific, Legal, Economic, and Governance Considerations' [2024] Elementa: Science of the Anthropocene 1; Andreas Oschlies and others, 'Perspectives and challenges of marine carbon dioxide removal' [2025] Frontiers in Climate 1.

11 UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA) 'Informal Summary Report by the Co-facilitators of the Ocean and Climate Change Dialogue 2023-2024' (2 October 2024) OceanDialogue2024, 5-6.

12 United Nations Framework Convention on Climate Change (adopted 9 May 1992, entered into force 21 March 1994) 1771 UNTS 107 (UNFCCC); UNFCCC 'Glasgow Climate Pact' (13 November 2021) Decision 1/CMA.3 FCCC/PA/CMA/2021/10/Add.1, para 38; 'Sharm el-Sheikh Implementation Plan' (20 November 2022) Decision -/CP.27, para 18.

13 Andreas Oschlies and others, 'Climate Targets, Carbon Dioxide Removal, and the Potential Role of Ocean Alkalinity Enhancement' [2023] State of the Planet 1.

14 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (adopted 29 December 1972, entered into force 30 August 1975) 1046 UNTS 120 (London Convention); 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (adopted 7 November 1996, entered into force 24 March 2006) [2006] ATS 11 (London Protocol); See also Convention on Biological Diversity (adopted 5 June 1992, entered into force 29 December 1993) 1760 UNTS 79 (CBD); CBD 'COP Decision IX/16: Biodiversity and climate change' (9 October 2008) UNEP/CBD/COP/DEC/IX/16; CBD 'COP Decision X/33: Biodiversity and climate change' (29 October 2010) UNEP/CBD/COP/DEC/X/33.

15 Rebecca Loomis and others, 'A Code of Conduct Is Imperative for Ocean Carbon Dioxide Removal Research' [2022] Frontiers in Marine Science 1; Lina Röschel and Barbara Neumann, 'Ocean-based Negative Emissions Technologies: A Governance Framework Review' [2023] Frontiers in Marine Science 1.

16 Agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (adopted 19 June 2023, not yet in force) CN 203 2023 TREATIES-XXI 10 (BBNJ Agreement).

2. The Applicability of UNCLOS to Marine Geoengineering Activities

Geoengineering refers to the deliberate, large-scale manipulation of Earth's natural systems – including oceans – to alter physical, chemical, or biological processes in order to counteract climate change.[17] The 2013 amendment to the London Protocol defines marine geoengineering as 'any activity undertaken deliberately for the primary purpose of manipulating natural processes to counteract climate change, and that has the potential to result in deleterious effects, especially where those effects may be widespread, long-lasting or severe'.[18] While increasingly considered as a mitigation tool, these techniques carry ecological risks marked by significant scientific uncertainty, raising concerns about potential unintended and transboundary effects.[19] Such uncertainties demand a careful examination of existing legal frameworks, beginning with the role of UNCLOS.

Although UNCLOS does not explicitly regulate ocean-based carbon dioxide removal (CDR) activities, it may still have significant implications for both research and deployment of ocean CDR. UNCLOS provisions on marine environmental protection could shape how states regulate and oversee these activities.[20] In particular, Article 1 defines marine pollution broadly, focusing not on the nature of the introduced substances but on their potential harmful effects on the marine environment. This definition is intentionally open-ended, meaning that any substance, including CO_2, can be considered a pollutant under Article 1, provided it meets the necessary criteria.[21]

Part XII of UNCLOS is devoted to the protection of the marine environment, with Article 192 establishing a binding and unqualified obligation for all states to protect and preserve it. This duty applies universally, including to non-parties as a matter of customary international law,[22] and extends both within and beyond national jurisdiction.[23] States must take all necessary measures – individually or collectively – to prevent, reduce, and control marine pollution from any source, using the best practicable means available and considering their capacities.[24]

These obligations cover activities under a state's jurisdiction or control, including land-

17 Olivia Lazard and others, *Geoengineering: Assessing Risks in the Era of Planetary Security* (Carnegie Europe, 16 July 2025).

18 London Protocol 'Resolution LP.4(8) on the Amendment to the London Protocol to Regulate the Placement of Matter for Ocean Fertilization and Other Marine Geoengineering Activities' (adopted 18 October 2013, not in force) (2013 Amendment).

19 John Shepherd and others (eds), *Geo-engineering the Climate: Science, Governance and Uncertainty* (The Royal Society 2009); NASEM, A Research Strategy for Ocean-based Carbon Dioxide Removal and Sequestration (National Academies Press 2022).

20 Röschel, Neumann, 'Ocean-based Negative Emissions Technologies' (n 15) 10.

21 ITLOS Advisory Opinion (n 1) para 161.

22 Alan Boyle, 'Further Development of the Law of the Sea Convention: Mechanisms for Change' (2005) 54 International and Comparative Law Quarterly 563; Patricia Birnie, Alan Boyle and Catherine Redgwell, *International Law and the Environment* (4th edn, Oxford University Press 2021).

23 UNCLOS, art 2(3), 56(2) and 87(1).

24 ibid art 194 (1)-(3).

based, atmospheric actions and scientific research that may affect the marine environment.[25] UNCLOS also prohibits the transfer of pollution from one area to another or the transformation of one form of pollution into another.[26] States must adopt regulations addressing pollution from land-based sources, seabed activities, and dumping, and are required to protect rare ecosystems and endangered species habitats.[27] Furthermore, Articles 204-206 impose obligations to assess, monitor, and report the environmental impacts of authorized activities – provisions particularly relevant in evaluating the compatibility of marine geoengineering proposals under the law of the sea.

However, the implications of these obligations for ocean-based CDR activities remain uncertain. Under UNCLOS, techniques such as ocean fertilization or alkalinity enhancement present an inherent ambiguity: they involve introducing substances into the sea, potentially qualifying as marine pollution under Article 1(1)(4), yet they are also conceived as measures to mitigate atmospheric pollution.[28] While it is possible to argue that the risks of such interventions should be balanced against potential climate benefits,[29] UNCLOS itself provides no mechanism for weighing competing environmental harms.[30] Rather, its framework emphasizes prevention and precaution: Article 194 requires States to prevent, reduce and control pollution 'from any source', and Article 195 specifically prohibits transferring or transforming pollution. This suggests that the Convention provides very limited scope on its own for reconciling new ecological risks with anticipated climate benefits.

Nonetheless, UNCLOS is not a static treaty, but it is intentionally designed to evolve and to adapt to changing circumstances.[31] As a framework convention, UNCLOS employs a 'rule of reference' mechanism, allowing it to integrate rules and standards from other international instruments to further define and implement States' rights and obligations.[32] This structure ensures ongoing adaptability in response to new scientific and technical developments.

Part XII's obligations on marine environmental protection are meant to complement, not

---

25 ibid art 207-216 and 240(d).

26 ibid art 195.

27 ibid art 194(5).

28 Jesse Reynolds, 'Climate Engineering and International Law', *Elgar Encyclopedia of Environmental Law* (2016) Vol 1, 183.

29 Jesse Reynolds, 'International Law', in Michael B Gerrard and Tracy Hester (eds), *Climate Engineering and the Law: Regulation and Liability for Solar Radiation Management and Carbon Dioxide Removal* (Cambridge University Press 2018) 77-78; Ruben Prütz, 'A Taxonomy to Map Evidence on the Co-benefits, Challenges, and Limits of Carbon Dioxide Removal' [2024] Communications Earth & Environment 1.

30 Wil Burns, 'Governance of Ocean-Based Carbon Dioxide Removal Research Under the United Nations Convention on the Law of the Sea' (2023) 75 Maine Law Review 37, 64.

31 Boyle, 'Further Development of the Law of the Sea Convention' (n 22) 568; Reece Lewis, 'The "Constitution for the Oceans"? The Law of the Sea Convention as a Living Treaty' (2025) 74 International & Comparative Law Quarterly 1.

32 Myron H Nordquist, Shabtai Rosenne and Alexander Yankov (eds), *United Nations Convention on the Law of the Sea 1982: A Commentary* (Vol 4, Martinus Nijhoff 1991); Alexander Proelss (ed), *United Nations Convention on the Law of the Sea: A Commentary* (Nomos Verlagsgesellschaft 2017) 1396-1398; Lan Ngoc Nguyen, 'Expanding the Environmental Regulatory Scope of UNCLOS Through the Rule of Reference: Potentials and Limits' (2021) 52 Ocean Development & International Law 419.

override, those found in other international agreements,[33] reinforcing the general principles and objectives established by UNCLOS. States are required to implement relevant international standards – even if not party to the underlying instruments – when these are referenced in UNCLOS,[34] with obligations framed using terms like 'no less effective than' or 'at least the same effect as'.[35] This built-in flexibility is evident in UNCLOS's frequent reference to 'generally accepted international rules and standards', allowing the Convention to evolve within the broader international legal system, including the global climate change regime.[36] A further interpretive guide is provided by the principle of systemic integration, as elaborated in the International Law Commission's Fragmentation Report and reinforced by the ICJ's 2025 Advisory Opinion.[37] The Court underscored that treaties must be interpreted in light of 'the broader normative environment of international law', requiring coherence between environmental and climate regimes.[38] Applied to UNCLOS, this suggests that obligations under Part XII should not be read in isolation but in conjunction with states' commitments under the UNFCCC and Paris Agreement. For marine geoengineering, this systemic perspective implies that the evaluation of ocean CDR cannot be confined to pollution-prevention obligations alone but must also reflect the parallel duty to mitigate climate change. Such integration strengthens the case for regulatory frameworks that balance ecological risks with potential climate benefits.[39]

2.1. The 2024 ITLOS Advisory Opinion and Its Implications for Marine Geoengineering

In this context, the 2024 ITLOS advisory opinion offers a useful point of reference. Many of the written submissions presented to the Tribunal argued that carbon dioxide falls within the definition

33 UNCLOS, art 237.

34 Kari Hakapaa, *Marine Pollution in International Law, Material Obligations and Jurisdiction with Special Reference to the Third United Nations Conference on the Law of the Sea* (Academia Scientiarum Fennica 1981) 119; Bernard H Oxman, 'Complementary Agreements and Compulsory Jurisdiction' (2001) 95 American Journal of International Law 277; Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, *The Law of the Sea: Obligations of States Parties under the United Nations Convention on the Law of the Sea and Complementary Instruments* (United Nations 2004) 1-2.

35 UNCLOS, art 208(3), 209(2), 210(6) and 211(2).

36 ITLOS Advisory Opinion (n 1) para 130.

37 International Law Commission, 'Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law' (13 April 2006) Document A/CN.4/L.682 and Add.1; ICJ, *Obligations of States in respect of Climate Change* (Advisory Opinion) 2025 <www.icj-cij.org/sites/default/files/case-related/187/187-20250723-adv-01-00-en.pdf> accessed 19 August 2025 (ICJ Advisory Opinion).

38 ICJ Advisory Opinion (n 37) paras 162-171. See also Inter-American Court of Human Rights, Advisory Opinion AO-32/25 of May 29, 2025 Requested by the Republic of Chile and the Republic of Colombia: Climate Emergency and Human Rights <www.corteidh.or.cr/docs/opiniones/seriea_32_en.pdf> accessed 2 September 2025 [120]-[149].

39 Monica Feria-Tinta, 'The Master Key to International Law: Systemic Integration in Climate Change Cases' (2024) 13 Cambridge International Law Journal 20.

of marine pollution under UNCLOS and that states have a duty to prevent pollution caused by CO_2 emissions.[40] Additionally, most submissions highlighted the importance of interpreting UNCLOS in a manner that systematically incorporates obligations established under the UNFCCC and the Paris Agreement.[41]

The advisory opinion established that GHG emissions constitute pollution of the marine environment under Article 1(1)(4) of UNCLOS.[42] To reach this conclusion, ITLOS analyzed the three key elements of 'marine pollution' outlined in Article 1: (1) the presence of a substance or energy, (2) its introduction into the marine environment by human activities, and (3) the likelihood of causing harmful effects.[43] While ITLOS emphasized that these criteria are cumulative – meaning all must be met – it also highlighted the broad scope of UNCLOS' pollution definition, which applies to any activity satisfying these conditions.[44]

Since ITLOS determined that GHG emissions constitute marine pollution, this triggers Article 194 of UNCLOS, which obligates states to 'take all necessary measures to prevent, reduce, and control pollution of the marine environment from any source'. Although Article 194 grants states discretion in selecting appropriate measures, ITLOS clarified that these decisions must be objective, based on the best available climate science and relevant international rules and standards.[45] After reviewing these, ITLOS concluded that Article 194 imposes a legal duty on states to reduce GHG emissions.[46] It framed this duty as one of 'due diligence', requiring states to establish and enforce national systems to control emissions.[47]

As discussed above (paragraph 1), while ITLOS' focus on GHG emission reductions aligns with the most urgent climate mitigation priority, scientific evidence indicates that reducing emissions alone will not suffice and GHG removal will also be necessary. Despite this, the advisory opinion does not discuss the potential role of GHG removal technologies in addressing marine pollution caused by anthropogenic emissions. The reasoning in the advisory opinion suggests that ITLOS does not view marine geoengineering and GHG removal as pollution mitigation measures, but rather as potentially polluting activities themselves.[48] In its only reference to marine geoengineering, ITLOS

40 Benoit Mayer, 'Request for an Advisory Opinion submitted by the Commission of Small Island States on Climate Change and International Law' (2025) 119 American Journal of International Law 153.

41 ibid.

42 ITLOS Advisory Opinion (n 1) para 179.

43 ibid para 161.

44 ibid.

45 ibid para 206-207.

46 ibid para 223.

47 ibid para 235.

48 Nathaniel Yong-Ern Khng, Advisory Opinion on the Request for an Advisory Opinion Submitted by the Comm'n of Small Island States on Climate Change and Int'l Law (I.T.L.O.S.)' (2024) 63 International Legal Materials 998.

cited Article 195 of UNCLOS, which prohibits shifting environmental damage from one area to another or transforming one form of pollution into another.[49] ITLOS cautioned that marine geoengineering would violate Article 195 if it resulted in such a transformation. However, the advisory opinion does not specify when marine geoengineering activities might constitute marine pollution. This definitional gap highlights a key challenge in the current legal landscape. While preliminary steps to create assessment criteria have been taken under the London Convention and Protocol (LC/LP) and by scientific bodies like the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP),[50] these efforts have resulted in a cautious and fragmented regulatory approach focused primarily on the narrow issue of 'dumping' (see below paragraph 4).[51]

Against this backdrop, ITLOS' interpretation of GHG emissions as a form of marine pollution could provide a useful framework for assessing whether activities such as ocean fertilization fall under UNCLOS Article 1(1)(4). For instance, ocean fertilization involves: (1) introducing a substance (e.g., iron) (2) into the marine environment via human activities (e.g., vessel discharge) (3) with potential harmful effects (e.g., algal blooms, nutrient depletion). The same reasoning could apply to other marine geoengineering methods, such as ocean alkalinity enhancement, reinforcing the idea that states engaging in or allowing these activities could violate UNCLOS pollution regulations.[52]

Despite acknowledging the severe impact of climate change on the ocean, including ocean acidification and warming, ITLOS also recognized that even if all anthropogenic GHG emissions ceased, the harmful effects on the marine environment would persist due to the existing accumulation of GHGs in the atmosphere.[53] Certain marine geoengineering techniques, particularly those involving GHG removal, are presented as potential tools to mitigate these effects. Yet their reliability and ecological safety remain contested,[54] which is why international bodies, including ITLOS, have tended to frame them primarily in terms of potential risks of marine pollution rather than as established mitigation measures. This is significant because Article 192 of UNCLOS imposes an obligation on states to protect and preserve the marine environment. ITLOS described this duty as 'broad in scope',

49 ITLOS Advisory Opinion (n 1) para 231.

50 GESAMP, *High Level Review of a Wide Range of Proposed Marine Geoengineering Techniques* (IMO 2019); IMO 'Report of the Forty-Sixth Consultative Meeting and the Nineteenth Meeting of Contracting Parties' (22 November 2024) LC 46/17.

51 Karen N Scott, 'Chapter 3 Mind the Gap: Marine Geoengineering and the Law of the Sea' in Robert C. Beckman and others (eds), *High Seas Governance* (Brill 2019); Kerryn Brent, 'Marine geoengineering governance and the importance of compatibility with the law of the sea' in Jan McDonald, Jeffrey McGee, Richard Barnes (eds), *Research Handbook on Climate Change, Oceans and Coasts* (Edward Elgar Publishing Limited 2020); Kangjie Sun and others, 'New Frontiers in the Law of the Sea and Policy Integration' (2025) 17 Water 1.

52 Robert C. Steenkamp, 'Legal Considerations Relevant to Research on Ocean Alkalinity Enhancement' [2023] State of the Planet 1.

53 ITLOS Advisory Opinion (n 1) para 199.

54 Sarah R Cooley and others, 'Sociotechnical Considerations About Ocean Carbon Dioxide Removal' (2023) 15 Annual Review of Marine Science 41.

encompassing all forms of harm to the marine environment, including those caused by climate change.[55] States are therefore obligated to protect marine ecosystems from climate-induced harm, and where damage has already occurred, they may also have a duty to take restorative measures. ITLOS acknowledged this by stating that 'preservation' may include restoring marine habitats and ecosystems.[56] The use of 'may' is best understood as introducing flexibility: the duty of restoration arises where necessary, depending on the status of the marine environment and the extent of climate-related degradation.[57]

In its advisory opinion, ITLOS highlighted that participants identified three main categories of actions to protect and preserve the marine environment in the context of climate change: (1) climate change mitigation measures, (2) adaptation and resilience strategies, and (3) initiatives concerning marine ecosystems, including those with carbon sequestration functions.[58] ITLOS confirmed that states have a legal obligation to reduce GHG emissions and are required to implement resilience and adaptation measures as prescribed under climate treaties.[59] However, it did not explicitly address states' obligations concerning the protection of marine ecosystems that act as carbon sinks.

Although ITLOS acknowledged that marine restoration efforts could enhance carbon sequestration, it did not clarify which specific measures states should or could implement. Many marine geoengineering approaches have the potential to increase carbon sequestration, mitigate ocean acidification, and counteract other climate-related impacts on the marine environment. However, given ITLOS' caution regarding pollution transformation under Article 195, the legal status of these activities under UNCLOS remains uncertain.

3. The Role of the London Convention and Protocol in Regulating Ocean Dumping

With regard to the regulation of pollution from dumping, UNCLOS directly references the London Convention of 1972 and its 1996 Protocol as the competent global framework. First, when defining 'dumping', UNCLOS largely adopted the definition used in the London Convention.[60] Addi-

55 ITLOS Advisory Opinion (n 1) para 385, 388.

56 ibid para 386.

57 ibid para 390; Yoshifumi Tanaka, *The International Law of the Sea* (4th edn, CUP 2023) 404-432; Bastiaan E Klerk, 'The ITLOS Advisory Opinion on Climate Change: Revisiting the Relationship between the United Nations Convention on the Law of the Sea and the Paris Agreement' (2025) 34 Review of European, Comparative & International Environmental Law 181.

58 Wenxian Qiu, Bingqing Wu and Tsung Han Tai, 'Judicialization and Legal Implications of International Maritime Governance in the Context of Climate Change: Insights from ITLOS Advisory Opinion No. 31' (2025) Frontiers in Marine Science 1.

59 ITLOS Advisory Opinion (n 1) para 390.

60 UNCLOS, art 1(1)(5); London Convention, art III (1)(a)-(b).

tionally, UNCLOS requires states to establish national laws on dumping that are at least as effective as the global rules and standards set by these instruments,[61] emphasizing the need for their periodic reassessment.[62] This dynamic has been carried forward by the Contracting Parties to the London Convention and Protocol. In practice, the Convention and the Protocol operate as a single institutional framework, with their Contracting Parties meeting jointly, adopting resolutions, and utilizing detailed waste assessment guidance to inform implementation.[63]

In terms of enforcement, states should exercise jurisdiction in accordance with UNCLOS provisions and relevant international norms formed through competent international organizations or diplomatic conferences.[64] If a state fails to meet its implementation and enforcement duties with respect to dumping, other UNCLOS parties may seek to hold it accountable under the Convention, including through the compulsory dispute settlement procedures provided for in Part XV.[65] The interconnection established through this rule of reference is significant because it ensures that global standards developed under the London Convention and Protocol acquire binding force within the broader UNCLOS framework, thereby reinforcing consistency and avoiding regulatory fragmentation.[66]

A central question for the governance of ocean CDR, therefore, is whether and to what extent these activities fall within the scope of the London Convention and Protocol. Both instruments define 'dumping' broadly as the deliberate disposal of wastes or other matter at sea from vessels, aircraft, platforms, or other man-made structures.[67] However, the definition explicitly excludes the 'placement of matter for a purpose other than mere disposal', provided that such placement is consistent with the treaties' objectives.[68]

Ocean CDR techniques present a challenge to this framework. Although they involve introducing substances into the marine environment, their purpose is not waste disposal, but the intentional

61 UNCLOS, art 210(1) and (6); Tanaka, *The International Law of the Sea* (n 57) 351-439; Proelss, *United Nations Convention on the Law of the Sea* (n 32) 1407-1419.

62 UNCLOS, art 210(4).

63 IMO, 'Waste Assessment Guidelines under the London Convention and Protocol' (IMO 2021); 45th Consultative Meeting of Contracting Parties to the London Convention and the 18th Meeting of Contracting Parties to the London Protocol (2-6 October 2023) 'Statement on Marine Geoengineering' LC 45/LP 18, annex 4; Andrew Birchenough, Fredrik Haag and Zhen Sun, 'The Development and Administration of the London Convention and Protocol: "Two Instruments, One Family" and Their Link to the United Nations Convention on the Law of the Sea' (2024) 39 The International Journal of Marine and Coastal Law 429, 433-434.

64 UNCLOS art 216(1).

65 Robin Churchill, Vaughan Lowe and Amy Sander, *The Law of the Sea* (4th edn, Manchester University Press 2022) 679.

66 London Convention, art XIII; UNCLOS, art 237; International Maritime Organization (IMO) 'Implications of the United Nations Convention on the Law of the Sea for the International Maritime Organization' LEG/MISC.8 (30 January 2014) 75-76; Wanping Zeng, Guihua Wang, 'A Study on the Governance Pathways of the Law of the Sea in Response to Climate Change' [2024] Frontiers in Marine Science 1.

67 London Convention, art III(1)(a); London Protocol, art 1(4)1.

68 London Convention, art III(1)(b)(ii); London Protocol, art 1(2)(2)

stimulation of carbon-sequestering mechanisms[69] either biological (e.g., phytoplankton growth via ocean fertilization or biomass generation through seaweed cultivation) or chemical (e.g., altering seawater alkalinity).[70] While the London Convention and Protocol do not define the term 'disposal', it has generally been understood in practice as the deliberate discarding of materials no longer considered useful.[71] However, the legal interpretation is not straightforward. In some official treaty languages, broader terms are used – for example, the French version refers to '*immersion*', which encompasses any introduction of material into the sea, not just waste disposal. In addition, the phrase 'wastes and other matter' is open-ended, creating uncertainty over whether materials introduced for carbon removal purposes fall within the scope of the Convention and Protocol.[72] As a result, whether an ocean CDR activity qualifies as 'dumping' or exempted 'placement', will depend on its consistency with the objectives of these instruments.

This assessment plays out differently across techniques. Ocean fertilization, for instance, involves the introduction of iron or other nutrients into surface waters for the purpose of stimulating phytoplankton growth.[73] Given that it requires the intentional discharge of substances from a vessel, it aligns closely with the definition of 'dumping', as illustrated by Resolution LC-LP.1 (2008),[74] which restricts non-research ocean fertilization. By contrast, ocean alkalinity enhancement generally entails the dispersal of alkaline minerals or electrochemically produced compounds.[75] These are not 'wastes' in the conventional sense but are introduced deliberately to alter seawater chemistry, raising uncertainty as to whether they fall within 'other matter' under the LC/LP. Seaweed cultivation raises yet another distinct challenge: while the initial placement of cultivation structures may not qualify as dumping, the eventual sinking of harvested biomass to sequester carbon could be interpreted as

69 IMO, 'Report of the 46th Meeting of the Scientific Group under the London Convention and the Seventeenth Meeting of the Scientific Group under the London Protocol' (31 March 2023) LC/SG 46/16; GESAMP, *High Level Review* (n 50) 15-28.

70 For an overview of the current scientific understanding and uncertainties surrounding key ocean CDR approaches, see: Matthew D Eisaman and others, 'Assessing the Technical Aspects of Ocean-Alkalinity-Enhancement Approaches' (2023) 2 State of the Planet 1; Ken O Buesseler and others, 'Next Steps for Assessing Ocean Iron Fertilization for Marine Carbon Dioxide Removal' [2024] Frontiers in Climate 1; Muhammad Ahmed Waqas and others, 'Environmental Performance of Seaweed Cultivation and Use in Different Industries: A Systematic Review' (2024) 48 Sustainable Production and Consumption 123.

71 IMO, 'Waste Assessment Guidelines' (n 63); Birchenough, Haag and Sun, 'The Development and Administration of the London Convention and Protocol' (n 63) 429.

72 IMO, 'Marine Geoengineering Including Ocean Fertilization: Progress Report from the Legal Intersessional Correspondence Group on Marine Geoengineering' (30 June 2023) LC 45/5/1.

73 David Emerson, 'A Cost Model for Ocean Iron Fertilization as a Means of Carbon Dioxide Removal That Compares Ship- and Aerial-Based Delivery, and Estimates Verification Costs' (2024) 12 Earth's Future 1.

74 IMO Resolution LC-LP.1(2008) on the Regulation of Ocean Fertilization (adopted 31 October 2008) LC 30/16 Annex 6 (2008 Resolution).

75 Yiming Guo and others, 'Site Selection for Ocean Alkalinity Enhancement Informed by Passive Tracer Simulations' (2025) 6 Communications Earth & Environment 1.

disposal.[76] These differences indicate that the regulatory assessment of ocean CDR techniques must be tailored to the specific characteristics of each method.[77]

The Parties to the London Convention and Protocol have sought to clarify the scope of their regimes through a series of resolutions. As mentioned above, Resolution LC-LP.1 affirms that ocean fertilization activities are inconsistent with the objectives of the two instruments unless conducted as legitimate scientific research.[78] This approach created a critical distinction: non-research ocean fertilization is considered 'dumping'. For Parties to the stricter London Protocol – which bans all dumping not explicitly permitted in its Annex 1 –[79] this effectively prohibits the activity. For Parties to the older London Convention, a permit could theoretically still be issued, as the substances used are not on its 'blacklist' of prohibited materials.[80] However, the joint resolutions have severely constrained this possibility in practice, thereby confining permissible activities to narrowly defined scientific research. In 2010, the Parties reinforced this stance with Resolution LC-LP.2, which introduced a precautionary assessment framework requiring environmental review before authorizing even research-related projects,[81] a practice reaffirmed in the 2023 Parties' Statement on Marine Geoengineering.[82]

Although these resolutions are not formally binding, they constitute subsequent practice that informs the interpretation of the Convention and Protocol.[83] They carry normative weight beyond the LC/LP system, as their approach is directly relevant to UNCLOS' duty of due diligence to prevent, reduce, and control marine pollution,[84] but it is intended primarily in a precautionary man-

76 Adam D Hughes, 'Seaweed Aquaculture for Carbon Farming: An Assessment Under the EU's QU.A.L.ITY (Quantification, Additionality, Long-Term Storage, Sustainability) Framework' (2025) 32 Corporate Social Responsibility and Environmental Management 3078.

77 NASEM, *A Research Strategy for Ocean-based Carbon Dioxide Removal and Sequestration* (n 19) 39; David L VanderZwaag and Abdul Hafez Mahamah, 'International Governance of Marine Geoengineering: Sketchy Seascape, Foggy Future – An Essay in Honor of Ted L. McDorman' (2024) 55 Ocean Development & International Law 624.

78 2008 Resolution, para 8.

79 London Protocol, Annex I: (1) dredged material, (2) sewage sludge, (3) fish waste, or material resulting from industrial fish processing operations, (4) vessels, platforms and other man-made structures, (5) inert, inorganic geological material, (6) organic material of natural origin, (7) bulky items primarily comprising iron, steel, concrete and similarly unharmful materials, and (8) carbon dioxide streams from carbon dioxide capture processes for sequestration.

80 London Convention, Annex I: (1) organohalogen compounds, (2) mercury and mercury compounds, (3) cadmium and cadmium compounds, (4) persistent plastics and other persistent synthetic materials, (5) crude oil and its wastes, refined petroleum products, petroleum, distillate residues, and mixtures containing those substances, (6) radiative wastes and other radioactive matter, (7) materials produced for biological and chemical warfare, and (8) industrial waste.

81 IMO Resolution LC-LP.2(2010) on the Assessment Framework for Scientific Research Involving Ocean Fertilization (adopted 14 October 2010) LC 32/15 Annex 5 (2010 Resolution).

82 IMO 'Statement on Marine Geoengineering' (n 63).

83 Alexander Proelss, 'Law of the Sea and Geoengineering' in Nele Matz-Lück, Øystein Jensen and Elise Johansen (eds), *The Law of the Sea: Normative Context and Interactions with other Legal Regimes* (Routledge 2024).

84 UNCLOS arts 192, 194; ITLOS Advisory Opinion (n 1) para 234; Chris Vivian and Linda Del Savio, 'The London Convention and Protocol: Adapting to Address the Ocean-Climate Crisis' (2024) 39 The International Journal of Marine and Coastal Law 519.

ner.[85] This underscores the potential limitations of relying solely on UNCLOS and LC/LP for ocean CDR governance. This is exemplified by the 2013 marine geoengineering amendment to the London Protocol, whose strict monitoring and assessment framework was designed to manage precaution rather than to enable a multidimensional evaluation of ecological, climatic, and societal factors.[86]

3.1 The 2013 Amendment: Limits and Prospects for Regulating Marine Geoengineering

In 2013, the Parties to the London Protocol adopted an amendment aimed at regulating marine geoengineering activities.[87] Although it is not yet in force, the amendment has become a key point of reference in subsequent practice, with recent statements of the Contracting Parties explicitly recalling its provisions.[88] Once effective, it will prohibit the placement of matter into the sea for marine geoengineering activities listed in Annex 4 of the London Protocol, unless the listing itself allows for a permit.[89] Moreover, the amendment defines marine geoengineering broadly, encompassing a wide range of ocean CDR techniques.[90] To date, only ocean fertilization has been listed, and consistent with the 2008 resolution, it may be permitted only if conducted as legitimate scientific research.[91]

In response to the growing interest in alternative techniques, the Parties to the London Convention and Protocol, in 2022, identified four additional marine geoengineering approaches – seaweed cultivation, ocean alkalinity enhancement, and two solar radiation management techniques – for priority evaluation.[92] In the same year, they established a working group – the Legal Intersessional Correspondence Group on Marine Geoengineering – to assess, among other issues, whether these four techniques should be added to the 2013 amendment's regulatory framework.[93]

Despite being the most advanced international framework on this topic, the London Protocol's approach has significant limitations. A key shortcoming is that it fails to integrate the increasing necessity of developing geoengineering technologies as part of broader climate change mitigation

85 Youna LBL Lyons, David Santillo, and Federica Catonini, 'Legitimate Scientific Research: Objective Scientific Assessment of Marine Geoengineering Activities under the London Convention and London Protocol' (2024) 39 The International Journal of Marine and Coastal Law 528.

86 José M Pacheco Castillo, Dorothee Seybold, and David Santillo, 'The London Regime's Adaptability and Impact' (2024) 39 The International Journal of Marine and Coastal Law 440.

87 2013 Amendment (n 18).

88 44th Consultative Meeting of Contracting Parties to the London Convention and the 17th Meeting of Contracting Parties to the London Protocol (15 November 2022) LC 44/17; IMO 'Statement on Marine Geoengineering' (n 62).

89 2013 Amendment (n 18) art 6 bis (1).

90 ibid art 1 para 5 bis.

91 ibid Annex 4 para 1(3).

92 LC 44/17 (n 89) Annex 2.

93 IMO, 'Marine Geoengineering Techniques for Climate Change Mitigation - LP/LC Evaluates Potential for Marine Environment Effects' <www.imo.org/en/MediaCentre/PressBriefings/pages/Marine-geoengineering.aspx> accessed 14 March 2025.

strategies. The amendment was negotiated before the 2015 Paris Agreement and therefore reflects a scientific and political context where CDR was not yet framed by the IPCC as a central element of mitigation pathways.[94] Subsequent scientific assessments have highlighted that negative emissions are now regarded as relevant components of climate strategies,[95] a perspective absent when the amendment was drafted.

Furthermore, the amendment's framework assesses activities solely based on their potential to harm the marine environment, without a mechanism to weigh those risks against the profound and worsening risks of climate inaction. Whether a given activity constitutes marine pollution requires an evaluation of its net ecological effect, considering both potential harms and benefits.[96] The objectives of the UNFCCC and the LC/LP are therefore intertwined: stabilizing atmospheric GHG concentrations presupposes that the ocean's carbon absorption capacity remains stable or improves, and both questions must be considered together.[97] While Annex 5 of the amendment requires permitting procedures to minimize environmental impacts, it does not establish a governance mechanism for this balancing act, leaving significant uncertainty.[98]

This suggests that a more differentiated governance approach is needed. Techniques such as ocean fertilization, ocean alkalinity enhancement, and biomass-based methods involve very different types of intervention in the marine environment, and thus raise distinct applicability questions under existing instruments.[99] Building on this recognition, the emerging BBNJ Agreement could provide a pathway to embed ocean CDR governance within a more coherent international framework, ensuring that ocean protection and climate mitigation are pursued in tandem.

4. Bridging Climate and Ocean Governance: Opportunities within the BBNJ Agreement

The Agreement under the United Nations Convention on the Law of the Sea on the Conservation

---

94 IPCC, *Climate Change 2014: Mitigation of Climate Change. Working Group III Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (CUP 2014); IPCC, *Global Warming of 1.5°C. An IPCC Special Report on the Impacts of Global Warming of 1.5°C Above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty* (CUP 2018).

95 Mustafa Babiker and others, 'Cross-sectoral Perspectives' in IPCC, *Climate Change 2022: Mitigation of Climate Change* (CUP 2022), 1245-1354; GESAMP, *High Level Review* (n 50).

96 GESAMP, *High Level Review* (n 50) 15-28; IMO, 'Report of the 46th Meeting of the Scientific Group' (n 70).

97 Laura G Elsler and others, 'Protecting Ocean Carbon Through Biodiversity and Climate Governance' (2022) 9 Frontiers in Marine Science 1.

98 Babiker (n 96).

99 Johnson (n 10); Proelss, 'Law of the Sea and Geoengineering' (n 84).

and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction (BBNJ Agreement) was formally adopted in June 2023 as the third implementing agreement of UNCLOS. As such, it is intended to complement and operate within the UNCLOS framework, alongside existing global, sectoral and regional instruments, including those relevant to climate and marine environmental governance.[100] The Agreement applies to the High Seas and 'the Area' defined as 'the seabed and subsoil beyond the limits of national jurisdiction'.[101]

Although climate change is only mentioned in passing in the treaty text, the Agreement nonetheless establishes mechanisms that can indirectly address climate related threats to marine biodiversity, such as ocean warming and acidification.[102] In particular, it promotes an ecosystem-based approach designed to enhance resilience to climate change, support the restoration of marine ecosystem integrity, and safeguard ecological processes such as carbon cycling services that are essential to the ocean's role in regulating the global climate.[103] The Agreement also strengthens coherence in decision-making by introducing concrete tools – including Area-Based Management Tools (ABMTs), Environmental Impact Assessments (EIAs), and provisions on institutional cooperation –[104] which can be mobilized to address cumulative pressures on biodiversity, including those associated with climate change and marine geoengineering.[105]

Although some scholars have expressed concern that the BBNJ Agreement could exacerbate institutional fragmentation if treated solely as a gap-filling instrument,[106] it may also serve as a bridging framework between the law of the sea and the international climate regime. In particular, by operationalizing cross-cutting procedures such as EIAs and ABMTs in Areas beyond National Jurisdiction (ABNJ), the Agreement could enhance coherence in decision-making processes affecting biodiversity and climate-relevant marine ecosystems.[107]

The BBNJ Agreement does not explicitly regulate marine CDR (mCDR), yet one of the key drivers behind its adoption was the broader need to assess and manage emerging human activities in areas beyond national jurisdiction. To date, as most mCDR research has been carried out in coastal

100 BBNJ Agreement, art 5.

101 UNCLOS, art 1(1)(1); BBNJ Agreement, art 1(2).

102 BBNJ Agreement, Preamble.

103 ibid art 7(h).

104 ibid arts 17-27 (ABMTs), arts 27-39 (EIAs); arts 47-51 (institutional arrangements).

105 Rakhyun E. Kim, 'The likely impact of the BBNJ Agreement on the architecture of ocean governance' (2024) 165 Marine Policy 1.

106 ibid; Johan Nikolaj Lausen, Johanna Sophie Buerkert, 'Fragmentation Revisited: A Critical Analysis of the Effects of Introducing the BBNJ Agreement into the Ocean Governance Landscape' (2025) 94 Nordic Journal of International Law 184.

107 Elizabeth M De Santo and others, 'Protecting Biodiversity in Areas Beyond National Jurisdiction: An Earth System Governance Perspective' [2019] Earth System Governance 1; Karen N Scott, 'The BBNJ Agreement: Strengthening the Oceans-Climate Nexus?' in James Kraska, Ronan Long and Myron H Nordquist, *Peaceful Maritime Engagement in East Asia and the Pacific Region* (Brill 2022).

and nearshore environments under national jurisdiction, the LC/LP framework has rightly been the primary focus of regulatory attention.[108] However, the BBNJ Agreement is poised to become a critical complementary instrument for two key reasons. First, it provides a framework for governing future large-scale research or deployment that may occur within ABNJ. Second, and perhaps more importantly, it offers mechanisms to assess and manage the transboundary effects of national activities that extend into the high seas. In this sense, it fills a crucial governance gap by providing a framework to oversee mCDR activities that either take place in ABNJ or have significant impacts there.

The BBNJ Agreement may contribute to the governance of ocean CDR activities through its provisions on area-based management tools (ABMTs). The treaty defines an ABMT as a regulatory tool, such as a marine protected area, that applies to a geographically defined region where specific activities are managed to achieve conservation and sustainable use goals.[109] In principle, ABMTs could be used to guide the siting and conduct of mCDR projects – for example, by restricting activities in ecologically sensitive areas or requiring a staged research approach with continuous monitoring.[110] However, this competence is subject to a critical legal limit: Article 5(2) of the Agreement contains a 'not-undermine' obligation. This means that any ABMT established under the BBNJ must respect the mandates and frameworks of other relevant legal instruments and bodies, notably the LC/LP and the UNFCCC.[111] Building on this limitation, Article 8 requires Parties both to strengthen cooperation with other relevant frameworks and to promote the objectives of the BBNJ when engaging in their decision-making.

Read together, Articles 5(2) and 8 establish a balance: the BBNJ Agreement cannot override the mandates of the LC/LP or the UNFCCC, but it can complement them by supplying procedures and institutional mechanisms that those regimes lack.[112] This bridging role is further reinforced by the Conference of the Parties (COP), which is empowered not only to consider proposals for ABMTs but also to oversee EIAs and manage the Clearing-House Mechanism (see paragraph 5.1 below). Decision-making rules under Articles 48 and 49 emphasize broad participation and reliance on the best available science, enabling the COP to develop common standards for the assessment of novel

108 GESAMP, *High Level Review* (n 50) 42-78; Charlotte Clarke and others, 'Cumulative Effect Assessment in the Marine Environment: A Focus on the London Protocol/ London Convention' (2022) 136 Environmental Science & Policy 428.

109 BBNJ Agreement, art 1(1).

110 Bastiaan E. Klerk and others, 'Beyond Equilibrium Thinking: Dynamic Area-Based Management Tools in a Changing Ocean' (2024) 11 Frontiers in Marine Science 1.

111 Daniel Bodansky, 'Four Treaties in One: The Biodiversity Beyond National Jurisdiction Agreement' (2024) 118 American Journal of International Law 299; Robert C. Steenkamp, *International Law and Marine Geoengineering* (Nomos 2025).

112 Shani Friedman, 'The interaction of the BBNJ agreement and the legal regime of the Area, and its influence on the implementation of the BBNJ agreement' (2024) 167 Marine Policy 1.

activities, including ocean CDR, in ABNJ.[113]

The Agreement establishes a comprehensive process for designating and implementing ABMTs, which, if effectively enforced, could contribute to a balanced framework for ocean CDR governance. Under this system, Parties to the BBNJ Agreement can submit to the secretariat proposals for new ABMTs,[114] which are then subject to approval or rejection by the COP through the procedure described above.[115] These proposals must be grounded in the best available science and developed in consultation with relevant stakeholders, including civil society, the scientific community, the private sector and local communities.[116] Subsequently, if a proposal is approved, Parties must establish mechanisms for ongoing consultation and coordination with other international legal frameworks.[117]

The BBNJ Agreement's consultation requirements with the scientific community and other stakeholders ensure that diverse perspectives are considered. This approach promotes a more comprehensive assessment of ocean CDR, explicitly accounting for both risks and potential benefits. By contrast, as highlighted above, the London Convention and Protocol have so far approached marine geoengineering primarily through a precautionary lens, with discussions emphasizing ecological risks. While their assessment frameworks acknowledge that potential climate benefits may be relevant,[118] the regime's focus remains largely on preventing environmental harm, rather than weighing risks and benefits in a broader climate governance context.[119]

Beyond ABMTs, the BBNJ Agreement could also support climate governance through its provisions on environmental impact assessments (EIAs).[120] While the obligation to conduct EIAs is well established in international law, their precise scope and application remain uncertain. Part IV of the BBNJ Agreement helps address this gap by setting out specific processes and thresholds for EIAs in ABNJ. Article 27 explicitly emphasizes the need to consider cumulative impacts in this process.

---

113 Christine Gaebel and others, 'Institutionalising Science and Knowledge Under the Agreement for the Conservation and Sustainable Use of Marine Biodiversity of Areas Beyond National Jurisdiction (BBNJ): Stakeholder Perspectives on a Fit-for-Purpose Scientific and Technical Body' (2024) 161 Marine Policy 1.

114 BBNJ Agreement, art 19(1)

115 ibid art 22(1)(a).

116 ibid art 19 (2)-(3).

117 ibid art 22(3).

118 Harald Ginzky and Andreas Oschlies, 'Effective control mechanisms of research on climate engineering techniques for the public good: The London Protocol regulatory approach as a role model' (2024) 6 Frontiers in Climate 1; Youna LBL Lyons and others, 'Legitimate Scientific Research: Objective Scientific Assessment of Marine Geoengineering Activities under the London Convention and London Protocol' (2024) 39 The International Journal of Marine and Coastal Law 528.

119 2013 Amendment (n 18) Annex 4; IMO, 'Statement on Marine Geoengineering' (n 62). See also Compendium of Canada's Engagement in International Environmental Agreements And Instruments (Minister of Environment and Climate Change, 2020) <www.canada.ca/en/environment-climate-change/corporate/international-affairs/partnerships-organizations/london-protocol-prevention-marine-pollution.html> which notes that the Protocol's objective is to 'protect and preserve the marine environment… implementing a precautionary approach' and that amendments target the prevention of marine pollution from geoengineering.

120 BBNJ Agreement, arts 27-39; Scott, 'The BBNJ Agreement' (n 109) 415-416.

Under Article 1(6), cumulative impacts are defined to include climate change, ocean acidification, and related effects. Article 30(1)(ii) further requires that such cumulative impacts be taken into account 'as far as possible' when conducting an EIA. Although the obligation to assess cumulative impacts is already reflected in UNCLOS and further developed through LC/LP practice,[121] the BBNJ Agreement represents an important step forward by expressly integrating climate change and ocean acidification into the EIA process for activities in ABNJ.[122]

On this basis, when a country determines that an activity under its jurisdiction or control may have more than a minor or transitory impact on the marine environment, or when the potential effects are unknown or poorly understood, there is the requirement to conduct a preliminary screening.[123] Given the scientific uncertainty surrounding mCDR, most projects will trigger this requirement. If the screening reveals potential for harmful impacts, a full EIA is required. The Agreement further entrusts the COP with an oversight role: EIA reports must be submitted for circulation, transparency, and review, thereby strengthening accountability and enabling consistency across Parties.[124] This process ensures that the COP can function as a central forum for scrutinizing information and facilitating coordination with other international frameworks, supporting consistent standards and informed decision-making on ocean CDR activities.[125]

4.1. The Clear-House Mechanism: Enabling Inclusive Governance of Marine CDR

Some scholars argue that due to various forms of scientific uncertainty – including incomplete data and limited understanding of the potential impacts of ocean CDR on marine biodiversity – it is unlikely that the decision-making bodies established under the BBNJ Agreement will have the necessary mandate or expertise to effectively address the challenges posed by climate change and ocean acidification.[126] We argue that the BBNJ Agreement's new institutional instrument – the Clearing-House Mechanism (CHM) – could play a key role in enhancing transparency, coordination, and information-sharing related to ocean CDR activities. Established under Article 51 of the BBNJ Agreement, the CHM will function as an open-access platform to be developed by the Conference of the Parties.

Indeed, one of the main challenges in assessing and governing marine carbon dioxide removal

121 UNCLOS, arts 204-206; IMO Resolution LC-LP.2 (n 82).

122 BBNJ Agreement, art 1(6).

123 ibid art 30(1) and 31(1)(a).

124 ibid art 47(6).

125 Ibid arts 29(2) and 38(1).

126 De Santo and others (n 109) 2-3; Scott, 'The BBNJ Agreement' (n 109) 414-415.

is promoting knowledge pluralism.[127] This concept entails the engagement with diverse knowledge systems, disciplines, and stakeholder perspectives to support informed and inclusive decision-making processes and it is increasingly recognized as essential for the effective assessment and governance of mCDR approaches.[128] The purpose of the CHM is to facilitate the sharing, provision, and dissemination of information related to activities carried out under the Agreement, including those involving environmental impact assessments. Alongside its role in supporting environmental impact assessments and information exchange, the CHM should also be considered for its potential to facilitate knowledge pluralism. In particular, by enabling broader participation and integrating different perspectives, the CHM could contribute to more comprehensive evaluations of ocean CDR research and implementation proposals in, or with impacts on, areas beyond national jurisdiction.

In addition, complementing this mechanism is the Scientific and Technical Body (STB), established under Article 49 of the BBNJ Agreement, which could support the CHM and EIA processes by providing expert advice and guidance. In electing the STB's members, the Conference of the Parties (COP) is required to consider the importance of multidisciplinary expertise – including scientific and technical knowledge, as well as traditional knowledge held by Indigenous Peoples and local communities – along with equitable geographical representation.[129] This inclusive language opens the door for the participation of diverse knowledge holders within the STB, allowing the body to reflect a broader understanding of marine environments that extends beyond conventional scientific expertise.

Consequently, the CHM and STB could play a significant role in supporting the EIA process. Once an mCDR activity is approved, the proponent state assumes ongoing obligations to monitor and report on its impacts.[130] States are required to prepare regular reports and make them publicly accessible through the Clearing-House Mechanism.[131] The Scientific and Technical Body will review the reports and use the information to identify best practices and contribute to the development of future monitoring guidelines. In this way, the scope of monitoring extends beyond environmental effects to include economic, social, and health impacts. Therefore, these provisions create different channels through which a range of knowledge holders can contribute feedback on the monitoring and reporting of mCDR activities.

However, despite the treaty's promising language, the way in which the CHM will be operational-

127 Miranda Boettcher, Kerryn Brent, 'The Potential of the BBNJ Clearing House Mechanism to Enhance Knowledge Pluralism in Marine Carbon Dioxide Removal Assessment' [2024] Frontiers in Climate 1.

128 GESAMP, *High Level Review* (n 50); Miranda Boettcher and others, 'A Code of Conduct for Marine Carbon Dioxide Removal Research' (November 2023) Aspen Institute: Energy & Environment <https://oceanrep.geomar.de/id/eprint/59778/1/110223_Code-of-Conduct_FINAL2.pdf> accessed 25 March 2025.

129 BBNJ Agreement, art 49(2).

130 ibid art 35.

131 ibid art 36.

ized in practice to promote knowledge pluralism remains uncertain. This challenge extends beyond the governance of mCDR and reflects broader concerns in high seas governance. As currently described, the CHM is intended to serve as a structured, open-access platform for sharing information related to activities under the BBNJ Agreement. Nonetheless, the mere availability of information does not guarantee its accessibility. A central concern is how information submitted by proponent states, the STB, and other stakeholders will be presented. If materials are overly technical and lack clear, user-friendly summaries, the CHM's potential to support plural knowledge synthesis will be significantly constrained. To address this, the Conference of the Parties should consider how the STB or other relevant bodies might enhance accessibility – such as by requiring plain-language summaries or explanatory materials to facilitate engagement from a broader range of knowledge holders.

In addition, merely making information available does not ensure meaningful participation. The treaty provides limited guidance to proponent states on how notification and consultation should be conducted. Nevertheless, Article 38 – by mandating the STB to develop guidelines and standards for notification and consultation processes – creates an opportunity for the STB to define best practices for stakeholder engagement, particularly for activities in areas beyond national jurisdiction, including mCDR initiatives. The inclusion of diverse forms of knowledge – scientific, local, traditional, and Indigenous – will be essential to ensuring that assessments are inclusive and representative.[132]

Consequently, to realize the CHM's full potential in supporting inclusive governance of mCDR, we argue that several factors must be addressed during the treaty's implementation phase. These include ensuring that the STB reflects a diversity of expertise, that the CHM facilitates broad and meaningful access to information, and that robust standards for consultation are adopted. If effectively implemented, the BBNJ's Clearing-House Mechanism could play a central role in shaping the future governance of the mCDR on the high seas. Addressing these challenges proactively would not only advance knowledge pluralism in marine assessment processes but also contribute to the development of a stronger, more inclusive legal framework for the governance of marine geoengineering in response to climate change.

Nonetheless, the BBNJ Agreement's effectiveness will ultimately depend on the commitment of states to implementing its provisions. The treaty was opened for signature on 20th September 2023 and, to date, has been signed by 112 countries. However, only 21 countries have completed the ratification process. For the treaty to enter into force, it must be ratified by at least 60 countries, a process that could take considerable time.

132 Yoshifumi Tanaka, 'Reflections on the Environmental Impact Assessment in the BBNJ Agreement: Its Implications for the Conservation of Biological Diversity in the Marine Arctic beyond National Jurisdiction' (2024) 55 Ocean Development and International Law 85.

5. Final remarks

As the international community seeks to address the dual crises of climate change and marine biodiversity loss, the emergence of marine carbon dioxide removal in the global climate agenda underscores the need for legal frameworks that can integrate ocean protection obligations with emerging climate responses. Existing instruments such as UNCLOS and the LC/LP establish important principles for marine environmental protection but were not designed to address novel technological developments at the intersection of climate mitigation and ocean governance. For instance, the LC/LP's framework for assessing the 'dumping' of wastes is not well-equipped to evaluate the systemic, transboundary effects of activities like ocean alkalinity enhancement, which alter ocean chemistry rather than simply adding a pollutant. Their sectoral scope and limited institutional mechanisms leave uncertainties about how to assess, authorize, and monitor these activities in a coordinated manner.

In this respect, the BBNJ Agreement offers procedural innovations that provide complementary mechanisms to existing regimes. Its provisions on environmental impact assessments, area-based management tools, and transparency obligations provide new avenues for integrating climate-related risks into ocean governance. At the same time, its potential is subject to important limitations: the Agreement does not explicitly regulate marine geoengineering; its 'not undermine' clause requires careful coordination with existing regimes such as the London Convention and Protocol, and its effectiveness will depend heavily on the pace of ratification, the design of its institutions, and the political will of Parties. Nonetheless, the Agreement's emphasis on cumulative impacts, consultation with diverse knowledge systems, and inclusive decision-making broadens the range of perspectives that can be brought into regulatory processes, advancing the systemic integration of ocean protection and climate governance and offering opportunities for more context-sensitive governance of ocean-based CDR.

Rather than displacing precaution, these procedural tools could reinforce it within a more coherent governance framework by operationalizing a more balanced and procedural application of the principle. This ensures that, whereas the London Convention and Protocol have tended to approach marine geoengineering within a predominantly risk-averse framework centred on pollution prevention, both ecological risks and potential climate benefits are assessed transparently and collectively. If implemented effectively, the Agreement may serve as a bridge between the law of the sea and the climate regime by embedding cross-cutting mechanisms such as EIAs and ABMTs in areas beyond national jurisdiction, complementing rather than replacing the role of the LC/LP. In this way, the BBNJ Agreement could provide an adaptive legal framework – one capable of responding to evolving scientific knowledge, technological developments, and the need for inter-regime cooperation – while helping to prevent fragmentation in the governance of marine geoengineering.

Maritime Safety
and Security Law Journal

Current Development

Comment to Directive (EU) 959/2023 establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 1814/2015 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas Emission Trading System

1. The Extension of the European Trading System to Maritime Navigation: a Strengthening or Weakening of the Shipping sector?

With the adoption of EU Directive 959/2023,[1] international maritime transport has been included among the activities covered by the Emission Trading System (hereinafter ETS) of the European Union. This decision, grounded in the necessity to cover the only means of transport so far excluded from emission reduction commitments and in the risk to jeopardize results achieved in other areas, has been on the agenda since 2013, when the Commission adopted a strategy aimed at monitoring, reporting and verifying emissions from this sector, resulting in the adoption of Regulation 757/2015.[2]

Directive 87/2003, as amended[3] by Directive 959/2023, establishes a relatively straightforward roadmap for the progressive decarbonization of shipping, i.e., the obligation for companies to surrender a growing quantity of allowances, namely 40% of verified emissions for 2024, 70% for 2025 and 100% for 2026.[4] As with the aviation sector, one of the most challenging problem for this kind of regulation lies in the need to apply the ETS to those situations where just one of the two ports involved in the voyage is a European one. Given the lack of a cap or price on maritime transport emissions, the European legislator decided to cover, through the ETS, only a share of those emissions, while waiting for the adoption by the International Maritime Organization (IMO) of a global market-based measure (hereinafter MBM) with this purpose.[5] Based on this approach, Article 3ga of Directive 87/2003 provides that both the allocation of allowances and the surrender requirements apply to 50% of the emissions from ships undertaking voyages that either depart from a port of call under the jurisdiction of a member state and arrive at a port of call outside the jurisdiction of a Member State, or vice versa, and to 100% of the emissions from voyages between two Member States.

1 Council Directive 959/2023 [2023] amending Directive (EC) 87/2003 establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 1814/2015 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading system [2023] OJ L130/134 (hereinafter Dir 959/2023).

2 Council Regulation (EC) 757/2015 on the monitoring, reporting and verification of carbon dioxide emissions from maritime transport [2015], and amending Directive (EC) 16/2009 [2015] OJ L123/55 (hereinafter Dir 757/2015).

3 Council Directive 2003/87 of 13 October 2003 establishing a system for greenhouse gas emission allowance trading within the Union and amending Council Directive 96/61/EC [2003] OJ L275/32 (hereinafter Dir 87/2003).

4 Directive 87/2003 (n 3) art 3gb.

5 Directive 959/2023 (n 1) recital 20.

As noted by recital 20 of Directive 959/2023, this method offers a 'practical solution' to common but differentiated responsibilities issues, while preserving the effectiveness of the ETS. At the same time, the evolving regulatory landscape prompted the EU to enshrine an obligation, for the Commission, to report to the Parliament and to the Council in the event of the adoption by the IMO of a global MBM to reduce greenhouse gas emissions from maritime transport (art 3 gg para 1). Furthermore, in the event that this type of scheme – more precisely, a scheme 'in line with the objectives of the Paris Agreement and at least to a level comparable to that resulting from the Union measures taken under [the] Directive' – were not. to be adopted within 2028, the possibility is open to apply the surrender of allowances under the ETS to the remaining quota of the emissions from ships having as their origin or destination a third state (art 3 gg para 2). In this respect, it is interesting to note the resemblance with the language employed by the EU legislator when drafting Directive 29/2009 updating the ETS,[6] where the comparability of efforts undertaken by third states was explicitly considered as a decisive element in the free allocation of allowances to energy-intensive industries.

If the above-mentioned considerations and measures find their basis in the need of preserving and enhancing the integrity and effectiveness of climate legislation and of the ETS, it is evident that another relevant, underlying driver is the rise of costs that, as with any other economic activity, will damage the maritime sector, and the ensuing loss of competitiveness. Based on these considerations, Directive 87/2003 allows the allocation of an additional share of allowances, until the end of 2030, to those states whose economies have a high reliance on shipping, with the possibility of extending such an option beyond that date.[7]

Besides this solution, the concern for unfair competition by other fleets to which no carbon limitations apply, especially 'in the absence of a global market-based measure',[8] also lead the EU legislator to focus attention on the use of evasive port calls outside the EU and to the relocation of transhipment activities. In order to cope with these risks, Dir 2003/87 excludes from the definition of 'port calls' those located outside the Union, but less than 300 nautical miles from a port under the jurisdiction of a member state.[9] The concern for elusion and the corresponding intention to detect evasive behaviour may even justify increased surrender requirements for voyages where the evasion risk is higher, such as those to and from a port that is located in the Union's vicinity, when the third country has not adopted comparable measures.[10] For the time being, however, such a possibility is only formulated in the framework of the revision of the functioning of Directive 87/2003 that the Commission will perform biannually starting from 2024.[11]

Along the same lines, precise definitions and criteria are set with respect to administrative control on compliance with the new *régime*, with the purpose to mitigate the complexities that characterize,

6 Council Directive 2009/29 of 23 April 2009 amending Directive (EC) 87/2003 so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community [2009] OJ L140/63 recital 24.

7 Directive 87/2003 (n 3) ga para 3; art 3 gg paras 3-4.

8 Directive 959/2023 (n 1) recital 28.

9 Directive 87/2003 (n 3) art 3 ga para 2.

10 Directive 959/2023 (n 1) recital 29.

11 Directive 87/2003 (n 3) art 3 gg 3.

especially in the maritime sector, the identification of relevant legal persons and their connection to a national legal order. Consistently with Regulation 757/2015,[12] it is clarified that the person or organization responsible for compliance with the ETS should be the shipping company, defined as the shipowner or any other organization or person that has assumed from this latter the responsibility for the operation of the ship.[13] The shipping company operates, in turn, under the control of an administrative authority (i.e. a state), coinciding with the EU member where the company is registered if this is the case, or with third states identified based on the number of port calls or on the voyages trajectory of the ships concerned.[14] Failure by both entities to ensure compliance with the requirements set by the Directive should trigger a reaction 'in solidarity'[15] and imply, as a last resort measure, the ability of member states to refuse entry to these ships. As in the provision about elusive port calls, this hypothesis has not translated, at least until now, into an actual provision.

2. Emission Trading and IMO: a 'Global Market-Based Measure' or an Offsetting Device?

As mentioned in the preceding paragraph, one of the main concerns of the EU legislator regarding the extension of the ETS system to maritime transport relates to future action by the IMO in this area, which, as indicated in the provisions of Directive 959/2023, may require a revision of the ETS itself. IMO involvement in this regard can be traced back to the first decade of the new millennium, when the Marine Environment Protection Committee (hereinafter MEPC) started a reflection on emission reduction, also based on the exclusive competence of this organization to set global standards for shipping.[16] Since the inception of the debate, MBMs have been the subject of mixed attitudes: while recognizing their potential effectiveness, IMO members generally seemed to consider them as merely complementary to technical and operational reduction measures, whose level of development is higher.[17] Moreover, concerns have been raised regarding possible conflicts between the application of MBMs and the principle of no more favourable treatment – one of the main pillars of IMO Conventions and of port state control – and, at the same time, regarding the principle of common but differentiated responsibilities[18]. The latter concerns not only the scope of obligations and their possible differentiation according to categories of states, but also the use of revenues generated by MBMs which, according to a certain number of delegations, should be used for mitigation or adaptation activities in developing countries 'through existing or new funding mechanisms under

12 Directive 757/2015 (n 2) art 3 lett d).

13 Directive 87/2003 (n 3) art 3 lett w).

14 ibid art 3 gf para 1.

15 Directive 959/2023 (n 1) recital 34.

16 International Maritime Organization (Assembly), 'IMO Policies and Practices Related to the Reduction of Greenhouse Gas Emissions from Ships' (5 December 2003) A 23/Res.963, para 1 (d); however, the text only refers to an 'evaluation' the Assembly entrusts to the MEPC.

17 International Maritime Organization (Marine Environment Protection Committee), 'Report of the Marine Environment Protection Committee on its Fifty-Ninth Session' (29 July 2009) MEPC 59/24 para 4.119.

18 ibid para 4.117.

the UNFCCC'.[19]

The debate on the use of revenues of possible MBMs represents, in turn, a sort of litmus test for what is perhaps the most controversial aspect of the future system, i.e., its rationale: revenues have been mentioned as one of the possible purposes of a global levy or trading scheme, together with the offsetting of growing ship emissions in other contexts, and the provision of incentives to invest in more fuel-efficient ships.[20] The lack of a uniform approach as to the ultimate aim of an MBM more specifically emerged in a document submitted to the MEPC by the Clean Shipping Coalition (CSC) in 2021, setting out suggested principles for market-based measures,[21] including a flat refusal of exemptions and offsetting. According to this view, if the former (e.g. the exemption of a state or of a route) clearly jeopardizes the integrity of commitments, the latter, in the form of the use of financial resources to purchase permits or 'cheap project-based offsetting credits', would bring to windfall profits and climate loopholes.[22] With specific reference to the ETS, the document further emphasized how this zero-sum kind of logic is problematic in terms of integrity and additionality and tends to frustrate what should represent the real purpose of an MBM, i.e., the genuine reduction of emissions in that sector.[23]

The concern for the logic of offsetting that inspires this document is, of course, not surprising if one considers that it has been submitted by a global environmental organization focussing on shipping; at the same time, this issue has always been considered as a problematic aspect of Joint Implementation (JI) and Clean Development Mechanism (CDM). As it also results a from specialised study referenced by the same document, emission reductions resulting from the CDM (defined as an 'offsetting scheme') were not additional to existing commitments, with the result that certified emission reduction units obtained through it led to a global increase of emissions.[24] This conclusion is strengthened by at least two elements of the current international legal framework on climate change: on the one hand, 'crediting mechanisms' under Article 6 of the Paris Agreement[25] designed to replace CMD and JI, besides not being fully operationalized yet, do not rule out offsetting; on the other hand, offsetting is at the basis of the scheme that, within the International Civil Aviation Organization, has been identified to tackle GHG emissions.[26]

19 ibid para 4.128-129. United Nations Framework Convention on Climate Change (New York, 9 May 1992, entered into force 21 March 1994) 1771 UNTS 107.

20 ibid para 4.93.

21 International Maritime Organization (Marine Environment Protection Committee), 'Reduction of GHG Emissions From Ships' (17 September 2021) MEPC 77/7/17.

22 ibid para 14.

23 ibid para 15.

24 ibid.

25 Paris Agreement (adopted 12 December 2015, entered into force 4 November 2016) 3156 UNTS 79.

26 The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) established within ICAO is based on the offsetting of emissions in the aviation sector through credits obtained by emission savings in other sectors. <www.icao.int/environmental-protection/CORSIA/Pages/default.aspx> accessed 24 March 2025.

In the light of these uncertainties, it is no surprise that the first official strategy[27] drafted by IMO in 2018 limited itself to mention, among mid-term candidate measures to reduce GHG from shipping, 'new/innovative emission reduction mechanism(s), possibly including market-based measures'. An equally cautious approach characterizes the current strategy,[28] valid until 2030, encouraging the adoption of GHG reduction measures composed of a technical element (i.e. a goal-based marine fuel standard) and an 'economic element', built upon a 'maritime GHG emissions pricing mechanism', to be assessed in the light of specific criteria. The mistrust showed by the MEPC in respect of market-based measures is perhaps indicative of the awareness of the complexities inherent in balancing the need for non-discrimination with different historical responsibilities for climate change, but also in coping with existing schemes, such as the ETS, and with the expectations they place on third states so far exempted from emission reduction commitments.

3. Emission Reduction for Shipping: Navigating the Dire Straits of 'Comparable Commitments'

Based on the elements gathered above, it is possible to sketch some remarks on the extension of the ETS to the maritime sector and, under a broader perspective, on the viability of a hypothetical market-based measure adopted under the auspices of the IMO. In its current form, the application of the EU cap-and-trade system to shipping follows the overall underlying logic of the ETS, i.e., that of being a system inspired by an environmental imperative and adopted in pursuance of international obligations on carbon reduction, but dominated by a strong competitiveness concern that, at least in some circumstances, tends to become the predominant aspect.

This feature emerges, primarily, from the attention devoted by Directive 959/2023 to anti-circumvention provisions, and notably to those relating to elusive port calls and compliance. The defensive nature of these legal tools emerges not only from the explicit reference in the recitals to the current absence of a global MBM, but also from the prospect of sanctions or other coercive measures intended to enforce emission reductions. If the possibility of refusing entry to ships not in compliance with the new rules finds its basis in the need to preserve the effectiveness of the ETS (in line with the logic of port state control), the same does apply to the imposition of additional emission reductions to those voyages at greater 'risk of evasion', as it would be very hard to justify a more severe financial burden based on a speculative approach – and, to some extent, on an adverse presumption *vis-à-vis* other states.

In addition, it is particularly in the provisions concerning voyages to and from third states that the defensive approach becomes evident: aware, in light of the experience gained in the aviation sector, of the opposition that any attempt to apply emission reductions to the entire voyage would encounter,

27 IMO (Marine Environment Protection Committee), 'Initial IMO Strategy on Reduction of GHG Emissions from Ships' Resolution (13 April 2018) MEPC.304(72) para 4.8 3.

28 IMO (Marine Environment Protection Committee), '2023 IMO Strategy on Reduction of GHG Emissions from Ships' (7 July 2023) MEPC.377(80) para 4.5 2.

the EU legislator directly adopted the 50% reduction option. However, this approach, meaningfully defined as a ‘practical compromise’, is a temporary solution contingent on the adoption of an MBM realizing a *comparable* commitment by third states, in the absence of which the integral application of emission reductions would come into play.

That said, the analysis of the documents and the emerging practice within the IMO in this area raises several doubts about the compatibility between the two models, primarily due to the different nature of the two organisations involved. The IMO is an international organization whose choices, though not immune from economic considerations, must reflect its global membership and, as a consequence, translate into a more nuanced position regarding issues of historical responsibilities for climate change, as well as those of competitiveness. Such an attitude is consistent with the pivotal role traditionally played within the IMO by the principles of non-discrimination and no more favourable treatment, which, although originally designed to apply to compliance with technical requirements, have now been extended to the organisation’s progressively assumed environmental mandate, ensuring that its policies are primarily guided by the principle of the integrity of obligations.

Conversely, the EU is a regional integration area whose predominant aspect is still the preservation of an internal market and is formed by states that, according to the principle of common but differentiated responsibilities, have been bearing the cost of the transition to a low-carbon world. At the intersection of the organisation’s environmental and trade policies, a system has been established - the ETS - which relies heavily on a market-based approach and has progressively evolved into a defensive mechanism, ultimately founded on the notion that any loss of competitiveness is not an unavoidable consequence of transition, but rather the result of the absence of ‘comparable commitments’ by third states. In addition to the elements and provisions mentioned above, this latter feature is further supported by the fact that, since 2021, the effectiveness of the ETS has been complemented by the Carbon Border Adjustment Mechanism, which replaced the free allocation of allowances to sensitive industrial sectors as a form of economic pressure on third states unwilling to undertake comparable commitments.

In the light of these elements, it is difficult to imagine the application of a global MBM measure genuinely pursuing emission reductions and based on the elimination of exemptions and offsets, especially if this result is sought in an area – maritime navigation – exposed to international competition and where, more specifically, national interests might be severely harmed by the de-flagging and re-flagging of ships. Future practice, together with developments within the international organization that holds the main competence *ratione materiae*, will tell if the awareness of the climate emergency will prevail over a zero-sum logic.

First published online: 23 July 2025

*Elisa RUOZZI**

*Associate Professor of International Law at the University of Turin (Italy) at the Department of Cultures, Politics and Societies.

Maritime Safety
and Security Law Journal

Current Development

Exploration of Blue Economy: a Prognosis of its Sustainability in the Wave of Maritime Rascality

1. Conceptual Framework

The blue economy is perhaps one of the most prominent concepts in the discourse on emerging economies across the globe. Alongside the green economy, it has received significant attention as an alternative approach to addressing growing financial vulnerability and uncertainty. This is particularly so because activities within the marine economy – encompassing coastal areas, oceans, and the great lakes – are of critical importance for economic growth, job creation, and the provision of livelihoods worldwide, especially in coastal communities.[1] The concept of the green or blue economy has often been defined by the United Nations Environment Programme (UNEP) as one that enhances human well-being and social equity while simultaneously reducing environmental risks and ecological scarcities.[2] The economic activities of the marine sector are widely regarded as playing a pivotal role in alleviating severe hunger and poverty by providing employment and a wide range of economic opportunities.[3] It provides food and livelihoods for a substantial portion of the global population and serves as the means of transportation for approximately 80% of global trade.

Against this backdrop, a number of human factors are responsible for the haphazard exploration and exploitation of marine resources. Some will be given account in the following paragraphs.

2. Striking the Enemy's Lair

Rascality at sea may be understood, in a philological sense, as intentional and unlawful acts of misconduct, dishonesty, or misbehaviour, including theft, vandalism, damage to vessels, and breaches of maritime regulations and protocols by seafarers. It has been observed that such rascality often gives rise to resentment. "Resentment at sea" refers to feelings of bitterness, anger, or frustration arising, for example, from lack of recognition or the poor treatment of coastal communities. In this regard, both radicalism and rascality may be seen as manifestations of resentment, each serving as identifiable indicators with direct implications for the marine and blue economy.

2.1 Piracy at Sea

Piracy is defined as any illegal act of violence, detention, or depredation committed for private ends by the crew or passengers of a private ship or aircraft on the high seas against another ship, or

1 Abdulrazaq O. Abdulkadir et al, 'Exploration of Blue Economy in Nigeria: A Prognosis of its Gain and Sustainability', (Conference on Waves of Change: Nurturing Ocean Resilience and Chartering Sustainable Futures, Faculty of Shari'ah and Law, Villa College, Maldives, held on 10th December, 2024 at Male, Maldives).

2 Pietro Cappabianca, 'The Impact of Regulation (EU) 2023/2631 on the Blue Economy and on the Aim of Preserving Oceans and Marine Biodiversity' (2024) MarSafeLaw Journal 14 – 15/2024, p.42.

3 Jacob Augustine and Okon Joseph Umoh, 'The Nigerian blue economy: economic expansion issues and challenges' (2022) Socio Economy and Policy Studies, p. 29-33.

against persons or property on board such a ship.[4] It has been argued that piracy cannot occur within waters subject to the full sovereignty of a state and its territorial sea.[5] It has also been contended that, for an act to constitute piracy, it must be committed for private gain or private ends, and that this requirement is what distinguishes piracy from terrorism. Unlike piracy, acts of terrorism are ordinarily not carried out for private ends.[6] This view has further been developed with the contention that, under Article 101 of the 1982 UNCLOS, piracy cannot occur at sea unless two ships are involved, in contrast to Kenny's position that piracy encompasses any armed violence at sea not constituting a lawful act of war. Bob Kao (2016) of Queen Mary University of London further notes the distinction between attacks occurring on the high seas and those taking place closer inland. The latter category does not fall within the UNCLOS definition of piracy; instead, it is addressed under the International Maritime Organization's (IMO) Code of Practice for the Investigation of the Crimes of Piracy and Armed Robbery against Ships, which provides a separate legal definition.

Similarly, Article 15 of the High Sea Convention of 1958 defines piracy as any illegal act of violence, detention or any act of depredation, committed for private ends by the crew or the passengers of a private ship or private aircraft on the high sea against another ship or against persons or property on board ship. In line with the provisions of Article 101 of the 1982 UNCLOS, it has been argued that both the 1982 UNCLOS and the 1958 High Seas Convention definitions of piracy are too narrow to address the challenges posed by modern-day piracy, as evidenced by the 1985 Achille Lauro incident.[7] After the adoption of the 1982 UNCLOS, it became evident that its definition of piracy failed to encompass many violent crimes committed at sea. For example, on 7th October 1985, four armed stowaways hijacked the Italian cruise liner Achille Lauro and killed Leon Klinghoffer, an American passenger who was wheelchair-bound, before throwing his body overboard. Because the attack occurred within Egyptian territorial waters, it fell outside the scope of the definition of piracy under the 1982 UNCLOS. Despite the international community's strong interest in prosecuting the perpetrators, they could not be charged with piracy but only with other offences.

Following this incident, the international community, through the United Nations and the International Maritime Organization (IMO), adopted the Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation (SUA Convention), which provides a legal basis for the prosecution of maritime violence not covered by the 1982 UNCLOS piracy regime. Bateman (2011) observes that both the IMO and the International Maritime Bureau (IMB) envisaged unlawful acts against ships occurring during passage, in port, or at anchorage, irrespective of whether the vessels are within or beyond territorial waters at the time of the incident. The underlying point is that piracy remains a universal crime upon which all states are obliged to take action.

The insecurity posed by piratical activities may develop into an uncontrollable force, thereby necessitating proactive measures to curb the unruly nature of such attacks. [8] It has been reported that, over the past several years, pirates, armed robbers, and kidnapping-for-ransom (KFR) groups

4 See Article 101 of the United Nations Convention on the Law of the Sea (UNCLOS) 1982.

5 Abdulrazaq O. Abdulkadir, 'Maritime pirates: The criminal underworld of the Nigeria Maritime Domain' (2015) Al-Hikmah University Law Journal, 1 (2), p.363-384.

6 ibid.

7 ibid.

8 Abdulrazaq O. Abdulkadir, 'Asymmetric Maritime Security Threat: A Factor in Nigeria Terrorism Eccentricity' (2014) NIALS Maritime Law Journal, Vol.2. p. 43.

have operated off the coasts of Nigeria, Benin, Cameroon, Côte d'Ivoire, Equatorial Guinea, Gabon, Ghana, São Tomé and Príncipe, and Togo.[9] These groups have been known to fire at vessels during boarding, and in some cases their attempts have been successful, resulting in the kidnapping of senior crew members such as Masters, Chief Engineers, or other Western or foreign personnel. The abducted crew are typically taken ashore in the Niger Delta region, where ransoms are demanded in exchange for their safe release. For example, on 1st January 2024, a kidnapping-for-ransom incident occurred in which crew members of a Tuvalu-flagged tanker were abducted approximately 46 nautical miles off Bioko Island, Equatorial Guinea.

On 29th May 2024, two crew members of a general cargo ship were kidnapped approximately 25 nautical miles south of Bioko Island, Equatorial Guinea. Such incidents have undermined the full exploration of resources in the region and have prompted the U.S. Department of State to issue travel advisories, warning ships transiting the area to exercise extreme caution and vigilance. These circumstances often lead mariners to cancel voyages, as the Gulf of Guinea is perceived as a high-risk zone. The persistence of piracy and kidnapping, and the resulting boycott of the Gulf of Guinea by mariners, have undoubtedly contributed to economic setbacks for the affected states. In 2008–2009, 91 and 114 incidents respectively were recorded in the Gulf of Guinea, while the reduction to 14 incidents in 2012 was viewed as a reprieve in comparison. However, it has been argued that this decline merely reflected a temporary respite linked to the Federal Government of Nigeria's amnesty programme during that period.

It is our position that the privatisation of maritime security and enforcement does not provide a viable solution to the insecurity pervading the maritime domain. In this perspective, the Nigerian government's reliance on private security companies to secure its maritime space constitutes a serious aberration and an uncritical transplantation of practices from both Asia and the Western world.[10] In jurisdictions such as parts of Asia and Australia, it is common practice for shippers who wish to strengthen security during transit and navigation to engage the services of private security companies in order to avert potential disputes or maritime insecurity during voyages. For instance, when ExxonMobil was attacked in 2011, the company was forced to shut down operations for approximately four months. Around the same period, following the Super Ferry 40 attack that claimed about 100 lives, the company engaged Hart – a U.S.- and U.K.- based security firm with no permanent staff – to enhance security measures during subsequent voyages, pursuant to straightforward contractual arrangements with shippers. It is notable that such security companies are typically owned and operated by ex-military personnel, in contrast to the Nigerian situation, where many of the firms are controlled by ex-militants whose antecedents include oil bunkering and the kidnapping of expatriates. Moreover, in Western and Arabian contexts, the engagement of private security is generally limited to functions such as ship tracking, crew training, provision of security personnel to escort vessels, investigation and recovery of missing or hijacked ships, and negotiation with attackers in cases of kidnapping or hostage-taking of crew members.

Despite such arrangements in the Western and Arabian worlds, the spirit of radicalism and rascality at sea has by no means been suppressed. For example, piracy originating from the Arabian Peninsula and Somalia, particularly off the Horn of Africa and in the Gulf of Aden, remained a

9 Enuma Moneke, 'Maritime piracy in Nigeria: The national security implications' (2014) NIALS Maritime Law Journal, Vol. 2, p. 85.

10 Sharifah Zubaidah Syed Abdul Kader, Abdulkadir. O. Abdulrazaq, 'Privatization of maritime security surveillance & enforcement galore: A compromise of state sovereignty' (2013) Journal of Law, Policy & Globalization, p.19-25.

persistent problem notwithstanding the unprecedented presence of naval forces – let alone private security companies. Of the 439 attacks recorded on the high seas in 2011, 236 occurred in African waters, representing 53% of global incidents (IMB, 2011). These incidents resulted in significant economic losses, with shippers paying approximately USD 159.62 million in ransoms for the release of 31 hijacked vessels, including the Irene-XI and Sambo Dream. In addition, USD 12 million was paid for the release of the *MV Zirku*, which had been held for 73 days. It has therefore been argued that the concessioning of maritime security surveillance to private security companies constitutes a dangerous development and reflects the weakness of both state authority and governance regimes.

2.2 Maritime Terrorism

Maritime terrorism is another form of rascality that militates against the effective exploration of the marine and blue economy globally. Although the 1923 *International Regime of Maritime Ports* grants foreign-flagged vessels the right of access to port states – provided such vessels meet the conditions set by the host state – the activities of terrorists within the maritime domain have hindered the full utilisation of the opportunities inherent in the blue economy.

Conclusion

The wave of rascality in the ebb of marine and blue economy has been a serious concern since the period of ancient times. This issue remains in the world oceans, thereby affecting maximum exploitation and exploration of the resources of the sea, despite various strategies deployed to curtail them. Various devices have been deployed to tame the scourge. In order to achieve unity of purpose in terms of war on terror, collaborations among nations has been one of the strategies adopted. Most of the world's powerful nations have also adopted national legislation in contradistinction to the general alignment by nations, with a view to combat rascality in the ebb of marine and blue economy, although this has been observed as neither winning any war nor attained any peace in the world ocean. Rather, it is the position of this paper that pre-emptive strike approach will bring about militarisation of crimes in the long run, because this strategy will result in a 'might is right' scenario.

First published online: 27 October 2025

Abdulrazaq O. ABDULKADIR[11]
Taofeeq A. ABDULRAHEEM[12]
Deborah O. AYODELE[13]

11 PhD, LL.M, LL.B, BL., Department of Private & Property Law, Faculty of Law, University of Ilorin. Email: kadir.or@unilorin.edu.ng.

12 PhD, LL.M, LL.B, BL, Department of Islamic Law, Faculty of Law, University of Ilorin.

13 LL.B, LL.M (Ilorin), BL. Barrister and Solicitor of the Supreme Court of Nigeria.