

Protecting the marine environment from the impacts of climate change: A regime interaction study

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Abstract

As the oceans are heavily impacted by climate change, effective regulatory responses are needed to mitigate, as well as to adapt to, these adverse effects. Problematically, however, neither the international climate change regime nor the international law of the sea specifically address the adverse effects of climate change on the oceans. This article analyses the interactions between these regimes, seeking to illuminate how Part XII of the United Nations Convention on the Law of the Sea (UNCLOS) on the protection and preservation of the marine environment ought to be interpreted in light of the Paris Agreement. As such, the limits of UNCLOS' capacity to grow and evolve as a 'living instrument' are explored. The article finds that the standard of conduct set by Part XII is informed by the Paris Agreement and the due diligence obligation that flows from it, which functions as a minimum threshold. States are, additionally, required to take measures that are specifically designed to protect the marine environment from the adverse effects of climate change and pollution from carbon dioxide.

1 INTRODUCTION

As global temperatures continue to rise, the impacts of climate change are becoming increasingly tangible. What is often forgotten is that these effects are only a fraction of their potential severity, were it not for the oceans. The oceans play a key role in regulating the Earth's climate and mitigating the rise of global temperatures, as they have taken up 90 percent of the excess heat in the climate system.¹ It is thus unsurprising that the oceans, too, are getting warmer. The global upper ocean has warmed since the 1970s as a result of human influences, causing a range of detrimental impacts. Large-scale coral bleaching events are occurring at an increasing frequency,² the oceans' oxygen content is decreasing,³ and ecosystems are disrupted as certain species are forced to migrate poleward, seeking refuge in cooler waters.⁴ The oceans are also an important carbon sink, having absorbed 20–30 percent of total anthropogenic carbon dioxide (CO₂) emissions.⁵ However, as a consequence of this absorption, large-scale acidification (i.e. the decrease in the pH value of the oceans) of the surface open ocean is occurring.⁶ The oceans cannot, however, continue to shield us from climate change indefinitely.

¹ IPCC, 'Summary for Policymakers' in HO Pörtner et al (eds), *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate* (IPCC 2019) 9.

² Between 2014 and 2017 alone, 75 percent of tropical reefs experienced bleaching-level heat stress, with nearly 30 percent reaching mortality level; CM Eakin et al, 'Unprecedented Three Years of Global Coral Bleaching 2014–17' (2018) 99 *Bulletin of the American Meteorological Society* S74.

³ A Oschlies, 'Drivers and Mechanisms of Ocean Deoxygenation' (2018) 11 *Nature Geoscience* 467.

⁴ IPCC, 'Summary for Policymakers' in V Masson-Delmotte et al (eds), *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2021) 1, 12–13.

⁵ IPCC (n 1).

⁶ IPCC (n 4) 5–6.

There is growing scientific evidence suggesting that as the oceans get warmer and more acidic, their ability to store carbon is reducing.⁷

Given the immense threat posed to the oceans by climate change, which in turn affects the global climate system as a whole, it is evident that effective regulatory responses are needed to mitigate, as well as adapt to, these adverse effects. Problematically, however, neither the international climate change regime, nor the international law of the sea specifically address the adverse effects of climate change on the oceans.⁸ Whereas the international climate change regime provides the principal legal framework for regulating mitigation of greenhouse gas emissions, as well as for adaptation to the adverse effects thereof, it pays scarce attention to the oceans—despite their important role as a carbon sink. In the United Nations Framework Convention on Climate Change (UNFCCC), the oceans are mentioned once, in Article 4(d), which recognizes their role as a carbon sink.⁹ In the Paris Agreement, besides a reference to Article 4(d) of the UNFCCC in Article 5(1), the oceans are merely referred to in a preambular recital.¹⁰ The law of the sea similarly does not directly address climate change. This is perhaps unsurprising, seeing as the United Nations Convention on the Law of the Sea (UNCLOS)¹¹ was adopted in 1982, when understanding of the potential severity of climate change was only just emerging. Although the UNCLOS provides a comprehensive regime for the protection and preservation of the marine environment, it can be questioned whether it is apt to address climate change—especially when taking into account the magnitude of the threat it poses to the oceans.

Neither the law of the sea nor the international climate change regime thus provides a clear set of rules for the protection and preservation of the marine environment against the adverse effects of climate change. This article seeks to elucidate the legal interactions between these regimes, with a view to ascertaining what obligations flow from their combined application to the issue of marine environmental degradation as a consequence of climate change. Trevisanut and colleagues identified two legal mechanisms which stimulate and guide regime interactions.¹² First, treaty-based interactions, i.e. interactions that are ‘fostered and steered by formal legal tools or methods which are interwoven in the normative threads of the respective treaties’.¹³ For instance, numerous treaties contain conflict or relationship clauses that govern their relationship with other agreements. Another example of treaty-based mechanism for regime interaction are so-called rules of reference, which are a characterizing feature of UNCLOS, contributing to its dynamic nature and making it a ‘living instrument’.¹⁴

⁷ M Marsay et al, ‘Attenuation of Sinking Particulate Organic Carbon Flux through the Mesopelagic Ocean’ (2015) 112 *Proceedings of the National Academy of Sciences of the United States of America* 1089, MC Rérolle et al, ‘Seawater-pH Measurements for Ocean-Acidification Observations’ (2012) 40 *Trends in Analytical Chemistry* 146.

⁸ See, in this regard, ER Harrould-Kolieb, ‘The UN Convention on the Law of the Sea: A Governing Framework for Ocean Acidification?’ (2020) 29 *Review of European, Comparative and International Environmental Law* 257; A Boyle, ‘Litigating Climate Change under Part XII of the LOSC’ (2019) 34 *International Journal of Marine and Coastal Law* 458; and J Harrison, ‘Litigation under the United Nations Convention on the Law of the Sea: Opportunities to Support and Supplement the Climate Change Regime’ in I Alogna, C Bakker and JP Gauci (eds), *Climate Change Litigation: Global Perspectives* (Brill/Nijhoff 2021) 415.

⁹ United Nations Framework Convention on Climate Change (adopted 29 May 1992, entered into force 21 March 1994) 1771 UNTS 107.

¹⁰ Paris Agreement to the United Nations Framework Convention on Climate Change (adopted 12 December 2015, entered into force 4 November 2016) 3156 UNTS 107.

¹¹ United Nations Convention on the Law of the Sea (adopted 10 December 1982, entered into force 1 November 1994) 1833 UNTS 397 (UNCLOS).

¹² S Trevisanut, N Giannopoulos and R Roland Holst, ‘Introduction: Regime Interaction in Ocean Governance’ in S Trevisanut, N Giannopoulos and R Roland Holst (eds), *Regime Interaction in Ocean Governance: Problems, Theories, and Methods* (Brill/Nijhoff 2020) 1, 12.

¹³ *ibid.*

¹⁴ J Barrett and R Barnes (eds), *Law of the Sea: UNCLOS as a Living Treaty* (British Institute of International and Comparative Law 2016).

The second legal technique through which regime interactions can be studied are interpretation-based interactions.¹⁵ These interactions emanate partly from Article 31 of the Vienna Convention on the Law of Treaties (VCLT), which provides a useful set of interpretation tools. Pursuant to Article 31, when interpreting a treaty provision, one needs to take into account the evolution of the content of their provisions and subsequent developments, including interpretation in light of the object and purpose, subsequent agreements and practice and relevant rules of international law applicable between the parties.¹⁶ Of particular relevance is Article 31(3)(c), pursuant to which ‘any relevant rules of international law applicable in the relations between the parties’ shall be taken into account when interpreting treaty provisions. This provision has been said to give expression to the principle of ‘systemic integration’, which provides a useful mechanism to ensure that legal issues are resolved in light of their broader international legal context.¹⁷ The International Court of Justice (ICJ) implicitly touched upon this principle in its Advisory Opinion on the *Legal Consequences for States of the Continued Presence of South Africa in Namibia*, in which the Court recognized that treaties do not operate in isolation, but need to be ‘interpreted and applied within the framework of the entire legal system prevailing at the time of the interpretation’.¹⁸ Interpreted restrictively, Article 31(3)(c) is only triggered when all parties to a treaty under interpretation are also parties to an extraneous treaty.¹⁹ Such an interpretation has, however, been said to be overly restrictive.²⁰ In a broader sense, this principle entails the obligation to consider relevant rules of international law where the issues in dispute fall within the scope of those extraneous rules.²¹ For the purposes of this article, the latter understanding will be used.

By exploring both mechanisms of regime interaction, this article seeks to provide the reader with a deeper understanding of the normative regime interaction²² between the regimes of law of the sea and climate change law, respectively.²³ Given that this study is concerned with the adverse impacts of climate change on the oceans, emphasis will be placed on Part XII of UNCLOS. The climate change regime, which, in a legal sense, is founded on the UNFCCC, has arguably entered a new epoch with the adoption of the Paris Agreement. It is therefore more fruitful to consider the interactions brought about by this relatively novel addition to this regime, although the other constituents thereof will also be considered. Perhaps superfluously, it should be noted that regimes are fluid, and interactions between them do not occur in a vacuum. The Paris Agreement and UNCLOS are part of a wider legal system, along with a plethora of other relevant rules of international law, such as the Convention on Biological Diversity (CBD) and the International Convention for the Prevention of Pollution from Ships

¹⁵ Trevisanut et al, ‘Introduction’ (n 12).

¹⁶ *ibid* 15.

¹⁷ International Law Commission (ILC) ‘Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law, Report of the Study Group of the International Law Commission Finalized by Martti Koskenniemi’ UN Doc A/CN.4/L.682 (13 April 2006).

¹⁸ *Legal Consequences for States of the Continued Presence of South Africa in Namibia (South-West Africa) Notwithstanding Security Council Resolution 276* (Advisory Opinion) [1971] ICJ Rep 16 (*Namibia*) para 31.

¹⁹ *European Communities – Measures Affecting the Approval and Marketing of Biotech Products* (Panel Report) WT/DS291/R, WT/DS292/R, WT/DS293/R (29 September 2006) para 7.68.

²⁰ B McGrady, ‘Fragmentation of International Law or “Systemic Integration” of Treaty Regimes’ (2008) 42 *Journal of World Trade* 589.

²¹ *ibid*.

²² Besides normative regime interactions, there are various other forms of regime interactions, such as institutional (see, in this regard, MA Young, ‘Introduction: The Productive Friction between Regimes’ in MA Young (ed), *Regime Interaction in International Law: Facing Fragmentation* (Cambridge University Press 2012) 1, 8–10), regulatory, operational and conceptual interactions (see JL Dunoff, ‘A New Approach to Regime Interaction’ in (Young, *ibid* 136).

²³ These are ‘special regimes’ in the broadest sense, i.e. ‘all the rules and principles that regulate a certain problem area’ see ILC (n 17) 106.

(MARPOL). It is, however, beyond the scope of this article to consider all interactions occurring within this wider legal constellation. This article analyses the interactions between UNCLOS and the Paris Agreement whilst drawing on other relevant rules and instruments only to the extent necessary. Moreover, although these instruments are in a non-hierarchical relationship to one another, their interactions are not symmetrical. This follows from their different legal character: whereas UNCLOS is a long-standing framework convention with a very comprehensive scope, the Paris Agreement was adopted relatively recently and provides a more detailed set of rules for a specific subject. Moreover, as will be shown, whereas UNCLOS is a very flexible legal instrument, in the sense that it is capable of evolving over time to take account of new realities, the same cannot be said for the Paris Agreement, which, although it has some dynamic elements, does not embody the same degree of flexibility.²⁴ Consequently, UNCLOS is more apt to be interpreted in light of the Paris Agreement than vice versa. Thus, the primary focus of this article is on how climate change considerations are incorporated into UNCLOS.

This article is structured as follows. Section 2 analyses the Paris Agreement, with a view to identifying the legal obligations that flow from it. In Section 3, a similar analysis is conducted, this time with UNCLOS as the main object. With an emphasis on its dynamic nature, a general overview of the ‘constitution of the oceans’ is provided, and key provisions of part XII—insofar relevant in relation to climate—are discussed. Section 4, which forms the core of this study, explores regime interactions between the two instruments and outlines the obligations placed upon States under UNCLOS to protect the marine environment from the harmful effects of climate change. Finally, Section 5 offers some concluding remarks.

2 THE PARIS AGREEMENT

2.1 Introduction and overview

The decision by 195 countries to adopt the Paris Agreement at the 21st Conference of the Parties (COP) to the UNFCCC on 12 December 2015 represents a historic breakthrough for climate change policy and a major success in multilateral diplomacy.²⁵ The main objectives of the Agreement are enshrined in Article 2, i.e. to keep temperature increases well below 2° C, with the aspirational goal of limiting warming to 1.5° C; to increase the ability to adapt to the adverse impacts of climate change; and to make finance flows consistent with a pathway towards low greenhouse gas emissions.²⁶ This provision effectively places mitigation, adaptation and climate finance on the same footing. This is an important change of direction in the UNFCCC regime, in which emphasis was thus far placed on mitigation.²⁷ A second important alteration that the Paris Agreement made to the UNFCCC regime is its different approach to differentiation, which had been a dividing issue throughout the development of the international climate change regime. In the Paris Agreement, the strongly bifurcated approach that characterized the UNFCCC and the Kyoto Protocol was largely abandoned, and replaced by a

²⁴ The Paris Agreement is dynamic due to its bottom-up structure and the built-in progression regarding the strength of commitments (see Section 2.2); however, it does not have the characteristics required for evolutive interpretation (i.e. long-standing nature and use of generic terms (see Section 3.2)).

²⁵ D Bodansky, ‘The Paris Climate Change Agreement: A New Hope?’ (2016) 110 *American Journal of International Law* 288.

²⁶ Paris Agreement (n 10) art 2(1).

²⁷ Although both the UNFCCC and the Kyoto Protocol (Kyoto Protocol to the United Nations Framework Convention on Climate Change, Kyoto (adopted 11 December 1997, entered into force 16 February 2005) 2303 UNTS 162) mention adaptation, both instrument have mitigation as their core objective.

system of ‘dynamic differentiation’.²⁸ The principle of common but differentiated responsibilities and respective capabilities (CBDR-RC) remains as one of the core principles underpinning the Agreement, however, it is applied in a more nuanced and dynamic fashion by recognizing that the application of the principle is responsive to differing national circumstances.²⁹

The primary way in which the Paris Agreement seeks to accomplish the goals enshrined in Article 2 is through the submission of nationally determined contributions (NDCs) that reflect each party’s highest possible ambition within the context of the principle of CBDR-RC.³⁰ The content of the NDCs is largely left to the parties, although some guidance is provided in various provisions of the Agreement.³¹ Importantly, the NDCs, which are to be communicated every five years, ought to represent a progression over time.³² The notion of progression is a recurring element in the Agreement, which has various built-in mechanisms that seek to foster a progressive dynamic regarding the strength of commitments.³³ These mechanisms seek to ensure that the aggregated efforts of all parties represent a ‘progression over time’.³⁴ Given that the first round of NDCs are estimated to lead to a 2.7° C temperature rise,³⁵ it is crucial that efforts are indeed strengthened over time.

2.2 Relationship to other instruments

Although the UNFCCC and the Paris Agreement do not contain any general conflict clauses, commentators have observed several provisions that seek to foster coherence with other regimes, such as international trade and human rights law, and thus, in effect, could be said to function as such.³⁶ In relation to the oceans, a preambular recital in the Paris Agreement, which notes the ‘importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity’,³⁷ has been said to perform such a function. Although this clause may at first sight look insignificant, it bears some normative weight. The primary purpose of a preamble is to provide context, which is important to determine how a treaty positions itself in the broader constellation of international legal frameworks and its relationship with other legal

²⁸ C Voigt, ‘“Dynamic Differentiation”: The Principles of CBDR-RC, Progression and Highest Possible Ambition in the Paris Agreement’ (2016) 5 *Transnational Environmental Law* 285.

²⁹ *ibid* 301.

³⁰ Paris Agreement (n 10) arts 3–4.

³¹ *ibid* arts 3–4, 7, 9–11 and 13.

³² *ibid* arts 4(9) and 3.

³³ One such mechanism is the ‘enhanced transparency framework’ (*ibid* art 13), pursuant to which all parties are required to regularly provide information on their greenhouse gas emissions and removals by sinks, as well as ‘information necessary to track progress made in implementing and achieving its [NDC]’. The transparency framework is complemented by a ‘global stocktake’ every five years, to assess the collective progress towards achieving its long-term goals of the Agreement (*ibid* art 14).

³⁴ *ibid* art 3.

³⁵ UNFCCC ‘Nationally Determined Contributions under the Paris Agreement. Synthesis Report by the UNFCCC Secretariat’ UN Doc FCCC/PA/CMA/2021/8 (17 September 2021).

³⁶ Van Asselt, for example, notes that Article 3(5) on coherence with the trade regime can also be viewed as a conflict clause (H van Asselt, ‘Legal and Political Approaches in Interplay Management: Dealing with the Fragmentation of Global Climate Governance’ in S Oberthür and OS Stokke (eds), *Managing Institutional Complexity: Regime Interplay and Global Environmental Change* (MIT Press 2011) 59, 63). Moreover, the reference to human rights in the preamble of the Paris Agreement has been said to foster integration with human rights law (A Savaresi, ‘Climate Change and Human Rights: Fragmentation, Interplay, and Institutional Linkages’ in S Duyck, S Jodoin and A Johl (eds), *Routledge Handbook of Human Rights and Climate Governance* (Routledge 2018) 31).

³⁷ Paris Agreement (n 10) preamble.

instruments. Indeed, this particular clause has been said to ‘assume a function of integration and of conflict avoidance with other areas of international law and policy’.³⁸

2.3 Legal obligations under the Paris Agreement

To answer the question how the Paris Agreement interacts with and informs the normative content of the provisions contained in Part XII of UNCLOS, it is necessary to identify legal obligations that flow from it. This is no easy task, given the diverse legal nature of the provisions contained therein. One way to conceptualize the divergent legal nature of the Paris Agreements’ provisions is through the idea of a spectrum of legal bindingness, with on the one side provisions that have no binding force and merely provide context, and on the other side provisions that create obligations of result. The provisions of the Paris Agreement span this spectrum of legal bindingness.³⁹ This section focuses on the provisions more towards the ‘binding’ end of the spectrum, as they bear the most normative value and consequently affect related instruments—like UNCLOS—the most. This is not to say that soft law and contextual provisions have no such effects. The Paris Agreement must be viewed as a whole, and its provisions cannot be viewed in isolation from one another. Even the contextual provisions have a bearing on the legal obligations that flow from the Agreement, and the combined interplay of its various provisions collectively determine the nature of its obligations. Thus, although emphasis is placed here on a selected number of provisions, these are viewed within the larger context of the Agreement as a whole.

A distinction can be made between *collective* (i.e. an obligation held by all parties collectively) and *individual* obligations (i.e. an obligation held by individual State parties), although this distinction is by no means clear-cut. The most important collective obligation is the temperature goal enshrined in Article 2:

This Agreement ... aims to strengthen the global response to the threat of climate change ... including by: (a) Holding the increase in the global average temperature to well below 2° C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5° C above pre-industrial levels.⁴⁰

Due to the absence of any indicators of legal obligations—such as, for example, the verb ‘shall’—no individual obligations can be derived from this provision. Instead, it reflects an obligation that is mandatory for the State parties *collectively*.⁴¹ Other examples of collective obligations are found in Articles 3, pursuant to which ‘the efforts of *all Parties* will represent a progression over time’⁴² and Article 4(1), providing that ‘Parties aim to reach global peaking of greenhouse gas emissions as soon as possible’.⁴³ All of these provisions are worded in obligatory language, yet no individual obligations can be derived from them. The question arises what the legal properties of these collective obligations are.

The notion of a collective obligation is no novelty in international law. In 1970, the ICJ acknowledged that ‘an essential distinction should be drawn between the obligations of a State

³⁸ MP Carazo, ‘Contextual Provisions (Preamble and Article 1)’ in D Klein et al (eds), *The Paris Agreement on Climate Change: Analysis and Commentary* (Oxford University Press 2017) 107, 118.

³⁹ D Bodansky, ‘The Legal Character of the Paris Agreement’ (2016) 25 *Review of European, Comparative and International Environmental Law* 142.

⁴⁰ Paris Agreement (n 10) art 2(1)(a).

⁴¹ A Zahar, ‘Collective Obligation and Individual Ambition in the Paris Agreement’ (2019) 9 *Transnational Environmental Law* 170.

⁴² Paris Agreement (n 10) art 3 (emphasis added).

⁴³ *ibid* art 4(1).

towards the international community as a whole, and those arising vis-à-vis another State'.⁴⁴ With regard to the former, the Court went on to state that '[i]n view of the importance of the rights involved, all States can be held to have a legal interest in their protection; they are obligations *erga omnes*'.⁴⁵ In a similar vein, the International Law Commission (ILC), in its Draft Articles on the Responsibility of States for Internationally Wrongful Acts, recognizes the existence of a collective obligation, a notion closely akin to obligations *erga omnes*,⁴⁶ which is owed to 'a group of States including that State, or the international community as a whole',⁴⁷ and 'established for the protection of a collective interest of the group'.⁴⁸ The difference, however, between obligations *erga omnes* and collective obligations otherwise, and those reflected in the Paris Agreement, is that the former is held by an individual State. The Paris Agreement, on the other hand, appears to establish an obligation that is not only *owed* to a community of States, but also *held* by it. This could be derived from the wording of the provisions cited above, as the obligations contained therein are placed upon 'all parties' (as opposed to 'each party'). However, given that this type of collective obligation is not yet present in international law, the mere implicit creation thereof is arguably not sufficient. Zahar argues that 'a legal innovation of such magnitude would have required explicit language—which is missing from the treaty'.⁴⁹ He goes on to conclude that the Paris Agreement creates 'a collective obligation in form', yet 'does not make it a legal obligation with legally binding force in substance. It therefore subsists at the level of an aspiration.'⁵⁰ What, then, is the function of these collective obligations, and how do they relate to the individual obligations?

To answer this question, it is useful to first identify the key individual obligations of result contained in the Paris Agreement. These are, *inter alia*: the obligation to submit prepare, communicate and maintain successive NDCs⁵¹ that will represent a progression beyond the Party's then current NDC and reflect its highest possible ambition;⁵² to provide the information necessary for clarity, transparency and understanding;⁵³ and to regularly provide a national inventory report of anthropogenic emissions by sources and removals by sinks and information necessary to track progress made in implementing and achieving a party's NDC.⁵⁴

All these obligations are essentially procedural in nature. This is perhaps most aptly reflected in the fact that States are obliged to submit their NDCs, yet there is no obligation to actually carry forward the commitments contained therein.⁵⁵ This does not mean, however, that defining the content of NDCs and the implementation thereof through domestic measures is entirely left up to the parties.⁵⁶ Rather, in formulating and implementing their NDCs, parties are under an obligation of due diligence—i.e. an 'obligation to deploy adequate means, to exercise best possible efforts, to do the utmost, to obtain this result'.⁵⁷ This flows from the

⁴⁴ *Barcelona Traction, Light and Power Company, Limited (Belgium v Spain)* [1962] 1964 ICJ Rep 3 para 33.

⁴⁵ *ibid.*

⁴⁶ The ILC avoids the use of the term '*erga omnes*', as it 'conveys less information' than the collective obligations described by it, see 'Draft Articles on Responsibility of States for Internationally Wrongful Acts, with Commentaries' (2001) II(2) Yearbook of the International Law Commission, 127.

⁴⁷ *ibid* art 42.

⁴⁸ *ibid* art 48.

⁴⁹ Zahar (n 41) 179.

⁵⁰ *ibid.*

⁵¹ Paris Agreement (n 10) art 4(2).

⁵² *ibid* art 4(3).

⁵³ *ibid* art 4(9).

⁵⁴ *ibid* art 13(9).

⁵⁵ C Voigt, 'The Paris Agreement: What Is the Standard of Conduct for Parties?' (2016) 26 Questions of International Law 19.

⁵⁶ *ibid* 20.

⁵⁷ *Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area* (Advisory Opinion) [2011] ITLOS Rep 10 (*Sponsoring States Advisory Opinion*) para 111.

wording of Articles 4(2) and 4(3), pursuant to which a party's NDCs shall reflect 'its highest possible ambition', and 'pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions'.⁵⁸ Although these provisions do not create legally binding obligations of result to achieve the content of a party's NDC, they arguably establish an obligation to design measures that are necessary, meaningful and effective within the parameters of their respective due diligence standards of conduct. How is this standard of conduct determined? This is where the collective obligations come into play, as they inform the due diligence standard parties must pursue in drafting and implementing their NDCs. It could be said that these collective obligations—most importantly the well below 2°C temperature goal and the requirement of progression overtime—function as a baseline from which all NDCs depart. Then, by applying the principles of CBDR-RC and equity, parties' respective due diligence standards can be determined.

3 THE UN CONVENTION ON THE LAW OF THE SEA

3.1 Introduction and overview

We now turn to the second element of this regime interaction study: the international law of the sea. At the core of this regime is the UN Convention on the Law of the Sea, often referred to as 'the constitution of the oceans'.⁵⁹ UNCLOS does, indeed, share some characteristics with national constitutions, as it contains important substantive obligations and sets up new institutional machinery. Further, UNCLOS is, similar to constitutions, intended to endure and difficult to amend. Due to these very characteristics, it has long been recognized that constitutions are dynamic, or 'living', instruments.⁶⁰ To what extent can the same be said about UNCLOS? This question is highly relevant, as UNCLOS does not directly address climate change. This section explores the extent to which UNCLOS is a 'living' treaty, seeking to ascertain the nature as well as the limitations of this dynamism, and identifying provisions that function as hooks upon which climate change issues can be hung.

A useful starting point for this analysis is UNCLOS' fourth preambular recital, as it aptly captures its scope and purpose, providing that it seeks to establish:

a legal order for the seas and oceans which will facilitate international communication, and will promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment.⁶¹

UNCLOS is one of the most comprehensive international legal instruments of its time.⁶² It comprises of 320 articles and nine annexes, and establishes a truly comprehensive regime to govern the oceans. Following its adoption at the third UN Conference on the Law of the Sea in 1982, 168 States have ratified the Convention. Although a number of key States—including the United States and Turkey—are not parties, they are nonetheless bound to many of the rules contained therein, as these have become part of customary international law.⁶³ In its 17 parts, UNCLOS covers a broad range of ocean-related issues, ranging from piracy to deep-sea mining

⁵⁸ Paris Agreement (n 10) art 4(2)-(3).

⁵⁹ "A Constitution for the Oceans", Remarks by Tommy T.B. Koh, of Singapore, President of the Third United Nations Conference on the Law of the Sea' (10 December 1982).

⁶⁰ See, e.g., W Rehnquist, 'The Notion of a Living Constitution' (1976) 54 Texas Law Review 693.

⁶¹ UNCLOS (n 11) preamble.

⁶² DR Rothwell and T Stephens, *The International Law of the Sea* (2nd edn, Hart 2016) 14.

⁶³ See JA Roach, 'Today's Customary International Law of the Sea' (2014) 45 Ocean Development and International Law 239.

and scientific research. Although a full discussion of all of its elements is beyond the scope of this article, a brief examination of its core provisions is in place here.

3.2 Relationship to other instruments

UNCLOS is embedded in the wider legal constellation more purposefully, compared to the Paris Agreement, by means of various conflict clauses as well as the extensive use of rules of reference, providing an extensive textual basis for analysis of its treaty-based regime interactions.

Article 311 governs the relationship of UNCLOS as a whole *vis-à-vis* other instruments, providing that '[t]his Convention shall not alter the rights and obligations of States Parties which arise from other agreements compatible with this Convention and which do not affect the enjoyment by other States Parties of their rights or the performance of their obligations under this Convention'.⁶⁴ Article 237 clarifies the relationship of Part XII to other treaties dealing with the protection and preservation of the marine environment, providing that 'obligations assumed by States under special conventions, with respect to the protection and preservation of the marine environment, should be carried out in a manner consistent with the general principles and objectives of this Convention'.⁶⁵ Another treaty-based mechanism that dictates UNCLOS' interaction with other regimes is the extensive use of rules of reference. By means of such rules, UNCLOS does not establish specific prescriptive standards but instead leaves the formulation of these standards to States and competent international organizations. The rules of reference are, in effect, a treaty-based references to generally applicable international rules and standards (GAIRS), that are then incorporated in UNCLOS to determine the level of due diligence of States in complying with their relevant obligations.⁶⁶ These rules are found all throughout UNCLOS in varying forms, but are most common in Part XII on the protection and preservation of the marine environment. Importantly, the standard of conduct set by these rules of reference varies greatly. Whereas some are minimum standards (e.g. Article 211 on pollution from vessels), others require States to merely take certain rules and standards into account (e.g. Article 207 on land-based pollution).

Besides these formal mechanisms of regime interaction, UNCLOS' open-ended and dynamic nature provides ample room for interpretation-based interactions with other instruments. Indeed, as elaborated upon in the following subsection, UNCLOS is commonly referred to as a 'living instrument'.

3.2 UNCLOS as a 'living' treaty

Sir Michael Wood, speaking about UNCLOS on the occasion of its thirtieth anniversary in 2012, characterized UNCLOS as a 'living instrument', as it was 'designed to be flexible'.⁶⁷ This was explicitly recognized in Judge Lucky's separate opinion to the *Fisheries Advisory Opinion* of the International Tribunal on the Law of the Sea (ITLOS), in which he further acknowledged that it can 'grow' and adapt to changing circumstances.⁶⁸ It is not a unique feature of UNCLOS that it is capable of evolving. In fact, some degree of flexibility is inherent to all treaties. As noted earlier, when interpreting any treaty, it should never be viewed in

⁶⁴ UNCLOS (n 11) art 311(2).

⁶⁵ *ibid* art 237(1).

⁶⁶ Trevisanut et al, 'Introduction' (n 12) 13.

⁶⁷ M Wood, 'Reflections on the UN Convention on the Law of the Sea' in Barrett and Barnes (n 14) lxxvii, 78

⁶⁸ *Request for an Advisory Opinion submitted by the Sub-Regional Fisheries Commission (SRFC)* (Advisory Opinion) [2015] ITLOS Rep 4 (*Fisheries Advisory Opinion*), Separate Opinion of Judge Lucky.

isolation, but within its wider international legal context.⁶⁹ The content of any treaty can, furthermore, evolve through, *inter alia*, subsequent practice and interpretation.⁷⁰ UNCLOS, however, has several unique characteristics that make it exceptionally malleable. Besides the extensive use of rules of references, another characteristic of UNCLOS that fosters flexibility is the dynamic nature of many of its key provisions, allowing their content to evolve over time. The idea of evolutive interpretation has its roots in the ICJ's *Namibia* judgment, in which the Court acknowledged the existence of evolutionary terms in treaties.⁷¹ In *Dispute Regarding Navigational and Related Rights*, the ICJ formulated two cumulative requirements for evolutive interpretation: (i) the treaty 'has been entered into for a very long time' or is 'of continuing duration', and (ii) the parties have used 'generic terms'.⁷² Additionally, it is well accepted that the intention of the parties to a treaty is also highly relevant in determining the evolutionary nature of its provisions. Treaties are, after all, mere 'embodiments of the common will of their parties'.⁷³

Applying these requirements to Part XII of UNCLOS warrants the conclusion that it lends itself well for evolutive interpretation. There can be little doubt that UNCLOS is a treaty of 'continuing duration', given its existence for 40 years, and arguably even longer.⁷⁴ Various provisions throughout Part XII also meet the second requirement, as they contain generic terms.⁷⁵ The use of such terms, as well as the extensive use of 'rules of reference' are a strong indication that Part XII of UNCLOS was drafted with the intention of creating a dynamic framework regime for the protection and preservation of the marine environment. The dynamic nature of the central provision of Part XII, Article 192, was aptly illustrated in the *South China Sea Arbitration*, where it was indicated that its content is informed by the provisions of Part XII and other applicable rules of international law,⁷⁶ effectively expanding its scope to encompass any relevant rules of international law at the time of application.

This dynamism is often invoked as one of the strengths of UNCLOS.⁷⁷ Too much flexibility can, however, be dangerous. A treaty should not start living a life of its own: flexibility should always be balanced with stability. This was underlined by the former President of the Supreme Court of the United Kingdom, Baroness Hale of Richmond, who compared treaties to trees:

A tree has a life of its own, but it can only grow and develop within its natural limits. It is not an unstoppable beanstalk grown from a magic bean. At a time when many are worried about how far the [European Convention on Human Rights] may develop

⁶⁹ See Vienna Convention on the Law of Treaties (adopted 23 May 1969, entered into force 27 January 1980) 1155 UNTS 331 (VCLT) art 31(3)(c); and *Namibia* (n 18) para 53.

⁷⁰ For an in-depth discussion of the evolution of treaties, see M. Fitzmaurice, 'The Practical Working of the Law of Treaties' in MD Evans (ed), *International Law* (3rd edn, Oxford University Press 2010) 171.

⁷¹ *Namibia* (n 18) para 53.

⁷² *Dispute Regarding Navigational and Related Rights (Costa Rica v Nicaragua)* [2009] ICJ Rep 213 para 66.

⁷³ Draft Conclusions on Subsequent Agreements and Subsequent Practice in Relation to the Interpretation of Treaties in ILC 'Report of the International Law Commission Sixty-fifth Session (6 May–7 June and 8 July–9 August 2013)' UN Doc A/68/10 (2013) 11ff.

⁷⁴ Many of its provisions are rooted in the 1958 Geneva Conventions, and some provisions, such as for example Article 87, can even be traced back to the early 1600s, when Hugo Grotius published his famous work *Mare Liberum*.

⁷⁵ There is no clear definition of 'generic terms'. The closest thing to a definition the ICJ has given is that they '[refer] to a class of [something]'; see *Aegean Sea Continental Shelf (Greece v Turkey)* [1978] ICJ Rep 3 para 77. Examples of generic terms include, *inter alia*, 'natural resources' (UNCLOS (n 11) arts 193–194) and 'the marine environment' (ibid art 192).

⁷⁶ *South China Sea (The Philippines v The People's Republic of China)* (Merits) (Award) (12 July 2016) [2020] 33 RIAA 153 (*South China Sea Arbitration*) para 941.

⁷⁷ Wood (n 67) lxxviii.

beyond the original expectations of its framers, it seems reasonable to ask whether there are any natural limits to its growth and what those might be.⁷⁸

How then, does one determine the ‘natural limits’ to the growth of UNCLOS? Sir Michael Wood noted that ‘adaptation and change, through interpretation of the Convention and the development of external standards, should be in line with the fundamental principles embodied in the basic package deal’.⁷⁹ Within the parameters provided by these principles, UNCLOS can grow and adapt. This leaves us with the question whether UNCLOS is flexible enough, taking into account these ‘natural limits’, to address climate change.

3.3 Part XII of UNCLOS and climate change

Continuing the metaphor of UNCLOS as a living tree, this subsection focuses on the branch that is Part XII, concerning the protection and preservation of the marine environment. Part XII contains several dynamic provisions that function as hooks for addressing climate change. This section provides a general overview of the relevant provisions, and considers the extent to which the generic terms contained therein expand their scope to encompass climate change.

Article 192 enshrines the general obligation to ‘protect and preserve the marine environment’.⁸⁰ The content of this very broadly formulated provision has been fleshed out in case law. The ITLOS elaborated upon the meaning of the term ‘marine environment’ in its *Fisheries Advisory Opinion*, in which it found that this includes living resources and marine life. It follows from Article 194 (5) that ‘rare and fragile ecosystems’ also fall within the ambit of this phrase.⁸¹ In the *South China Sea Arbitration*, Article 192 was discussed at length. The Tribunal found that the general obligation enshrined therein is one of due diligence, which ‘extends both to “protection” of the marine environment from future damage and “preservation” in the sense of maintaining or improving its present condition’.⁸² It went on to find that Article 192 entails a ‘positive obligation to take active measures to protect and preserve the marine environment’.⁸³ Article 192 is a textbook example of an evolutionary provision, as it is very open-ended and contains multiple ‘generic’ terms.⁸⁴ It should thus be interpreted so as to cover all contemporary threats to the marine environment, including those that emerged following its adoption. Given the immense threat posed to the marine environment by climate change, any State seeking to comply with its obligation under Article 192, and arguably Part XII as a whole, needs to take measures to reduce greenhouse gas emissions and protect the marine environment from the adverse effects of climate change. Any other conclusion would render Article 192 void, and would arguably be in violation of the principle of good faith as enshrined in Article 360 UNCLOS and Articles 26 and 31 VCLT. The content of the obligation enshrined in Article 192 is further informed by other provisions of Part XII and other rules of international law.⁸⁵ In this regard, Section 5 of Part XII, which provides a comprehensive regime to govern pollution

⁷⁸ The Rt Hon the Baroness Hale, ‘How Tall can the European Convention on Human Rights Grow?’ (2011) <https://www.supremecourt.uk/docs/speech_110616.pdf>, cited in J Barrett, ‘The UN Convention on the Law of the Sea: A “Living” Treaty?’ in Barrett and Barnes (n 14) 36.

⁷⁹ Wood (n 67) lxxviii.

⁸⁰ UNCLOS (n 11) art 192.

⁸¹ *Request for an Advisory Opinion submitted by the Sub-Regional Fisheries Commission (SRFC)* (Advisory Opinion) [2015] ITLOS Rep 4, 68.

⁸² *South China Sea Arbitration* (n 76) paras 941 and 957.

⁸³ *ibid* para 941.

⁸⁴ *Dispute Regarding Navigational and Related Rights* (n 72). The dynamic nature of Article 192 was implicitly recognized in the *South China Sea Arbitration* (n 76), in which the Tribunal recognized that the content of this obligation is informed by ‘applicable rules of international law’ (*ibid* para 141) which is constantly evolving, and so is, consequently, the content of Article 192.

⁸⁵ *South China Sea Arbitration* (n 76) para 941.

to the marine environment from various sources, is of key importance. ‘Pollution to the marine environment’ is defined by Article 1(1)(4) as follows:

the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.⁸⁶

Although this provision was not drafted with climate change in mind, it is well accepted that it is broad enough to encompass pollution by greenhouse gases—in particular CO₂.⁸⁷ As mentioned in Section 1, the oceans absorb enormous amounts of CO₂, as well as excess heat from the climate system. There is thus an ‘introduction by man’ of a substance (CO₂) as well as energy (heat) to the marine environment. These processes clearly result in ‘deleterious effects’, including large-scale coral bleaching, ocean acidification and deoxygenation, all of which harm ‘living resources and marine life’. Thus, the provisions of Part XII concerned with pollution are, in principle, applicable to climate change. Article 194 addresses pollution from ‘any source’, requiring States to take all measures that are necessary to ‘prevent, reduce and control’ such pollution, and to ‘ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their environment’.⁸⁸ Consequently, States are, by virtue of Article 194, under the obligation to take all necessary measures to prevent, reduce and control the harmful effects of climate change on the marine environment. These measures include those necessary to ‘protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life’.⁸⁹ In its *Fisheries Advisory Opinion*, the ITLOS found that this latter obligation is one of due diligence, which not only requires States to adopt appropriate rules and measures, but also a ‘certain level of vigilance in their enforcement and the exercise of administrative control’.⁹⁰ The content of this obligation is further elaborated upon in Section 4.3.

Whereas Article 194 contains a general obligation to combat pollution, the provisions contained in Section 5 of Part XII address specific sources of marine pollution. The most important provisions of Section 5, for present purposes, are Articles 207 and 212 on land-based and atmospheric pollution, respectively. Article 207 establishes the obligation to ‘adopt laws and regulations to prevent, reduce and control pollution of the marine environment from land-based sources, including rivers, estuaries, pipelines and outfall structures, taking into account internationally agreed rules, standards and recommended practices and procedures’, and to take other necessary measures to this end.⁹¹ This list is non-exhaustive, allowing this provision to adapt to changing circumstances and emerging challenges. Further dynamism is woven into this provision by means of the third paragraph, which includes a rule of reference and calls upon parties to ‘establish global and regional rules, standards and recommended practices and procedures to prevent, reduce and control pollution of the marine environment from land-based sources’.⁹² The applicability of Article 207 on land-based pollution to climate change is subject

⁸⁶ UNCLOS (n 11) art 1(1)(4).

⁸⁷ See, e.g., Boyle (n 8) 462 and KN Scott, ‘Ocean Acidification’ in E Johansen, SV Busch and IU Jakobsen (eds), *The Law of the Sea and Climate Change* (Cambridge University Press 2021) 113.

⁸⁸ *ibid* art 194.

⁸⁹ *ibid* art 194(5).

⁹⁰ *Fisheries Advisory Opinion* (n 68) para 197.

⁹¹ UNCLOS (n 11) art 207(1)-(2).

⁹² *ibid* art 207(3).

to debate.⁹³ There can be little doubt that greenhouse gas emissions are a form of land-based pollution, seeing as the bulk of emissions originate from land (e.g. coal-fired power plants, transportation, agriculture). Only a small portion of greenhouse gases are emitted at sea.⁹⁴ Although this provision was carefully drafted as to not produce any strong obligations, allowing States to retain a wide margin of discretion in balancing their economic development against environmental protection, this was done at a time when policymakers were completely unaware of the existential threat that climate change would come to pose to the oceans. The content of Article 207 is affected by these new circumstances and challenges, as well as by the transformation of the existing body of international law, through interpretation by means of systemic integration.⁹⁵ There is now a vast amount of international environmental treaties, all of which have a bearing on the content of Article 207. These include the instruments discussed here, i.e. the UNFCCC and the Paris Agreement, as well as other global and regional agreements.⁹⁶ Other provisions of UNCLOS are also of relevance, including Articles 1(1)(4) and 192, both of which, as we have seen, have evolved to encompass climate change. Taking all this into account, a compelling argument can be made that the scope of Article 207 has evolved to include all land-based sources of greenhouse gases. Thus, States are under an obligation to ‘adopt laws and regulations to prevent, reduce and control pollution of the marine environment’ from land-based greenhouse gas emissions, taking into account ‘internationally agreed rules, standards and recommended practices and procedures’, and to take necessary measures to this end.⁹⁷ A stricter standard of conduct is set by the fifth paragraph of Article 207, pursuant to which such laws, regulations and measures ‘shall include those designed to minimize, to the fullest extent possible, the release of toxic, harmful or noxious substances, especially those which are persistent, into the marine environment’.⁹⁸ This phrase differs slightly from that of Article 1(1)(4), as it adds the requirement that the substances released into the marine environment are *persistent*. Although the term ‘persistent’ is not defined in UNCLOS, its most common definition is something that ‘continu[es] to exist or occur over a prolonged period’.⁹⁹ Given that CO₂ stays in the ocean for more than 500 years on average,¹⁰⁰ and the heating of the oceans cannot easily be reversed, there can be little doubt that they are, indeed, persistent. Article 207(5) is thus also applicable to land-based greenhouse gas emissions.

⁹³ See, e.g., A. Proelß, *United Nations Convention on the Law of the Sea: A Commentary* (Beck 2017) 1277–1314, who takes the view that Article 207 does not cover land-based pollution that is transmitted through the atmosphere, since this would be covered by Article 212. On the other hand, Boyle takes the view that the scope of Article 207 has expanded to include pollution from ‘point or diffuse inputs from all sources on land’; see Boyle (n 8) 464.

⁹⁴ Maritime transport emits around 940 million tons of CO₂ annually and is responsible for about 2.5 percent of global greenhouse gas (GHG) emissions; see: International Maritime Organization, ‘Fourth IMO Greenhouse Gas Study’ (2020) <<https://imo.org/en/OurWork/Environment/Pages/Fourth-IMO-Greenhouse-Gas-Study-2020.aspx>>.

⁹⁵ See Section 1 and VCLT (n 69) art 31(3)(c).

⁹⁶ Some important instruments in this regard include: Convention for the Protection of the Marine Environment of the North-East Atlantic (adopted 22 September 1992, entered into force 25 March 1998) 2354 UNTS 67 arts 1(e) and 3; Convention on the Protection of the Marine Environment of the Baltic Sea Area (adopted 22 March 1974, entered into force 3 May 1980) 1507 UNTS 166 arts 2(2) and 6; and the Protocol for the Protection of the Mediterranean Sea against Pollution from Land-based Sources and Activities to the Barcelona Convention (adopted 17 May 1980, entered into force 17 June 1983) art 4 (b). Soft law instruments are also highly relevant, most importantly Agenda 21 in ‘Report of the United Nations Conference on Environment and Development’ UN Doc A/CONF.151/26 (vol I) (12 August 1992) paras 17.18–17.39; and the 2015 Sustainable Development Goals (UNGA ‘Transforming Our World: The 2030 Agenda for Sustainable Development’ UN Doc A/RES/70/1 (21 October 2015)).

⁹⁷ UNCLOS (n 11) art 207(1)-(2).

⁹⁸ *ibid* art 207(5).

⁹⁹ *Shorter Oxford Dictionary of English* (6th edn, Oxford University Press 2007).

¹⁰⁰ M McElroy, ‘The Ocean Carbon Cycle’ (2002) 11 *Harvard Magazine*.

Article 212 regulates pollution from or through the atmosphere, and sets a standard of conduct identical to those of Articles 194 and 207, namely to ‘prevent, reduce and control’ such pollution, and to take other necessary measures to this end. Further, a rule of reference identical to that of Article 207 is included in the fourth paragraph. Different views exist regarding the applicability of Article 212 to greenhouse gases.¹⁰¹ Its scope is limited to the air space under a States’ sovereignty and to vessels and aircraft of its registry. In contrast to Article 207, this provision provides an exhaustive list of the sources of pollution it covers (i.e. ships and aircraft), and is thus less apt for evolutive interpretation—as in this exercise the textual limits provided by a provision ought to be given due consideration. It could be argued, however, based on a strict textual interpretation, that this provision covers pollution from ships and aircraft *and* pollution from ‘the air space under [a State’s] sovereignty’, irrespective of the specific source. Such an interpretation would bring greenhouse gas emissions within the scope of Article 212. Problematically, however, the spatial scope of Article 212 is very limited (‘the air space under their sovereignty’) and sits uncomfortably with the nature of climate change, which is an inherently transboundary issue. Article 212, although highly relevant for regulating greenhouse gas emissions from specific sources (i.e. shipping and aviation),¹⁰² does not lend itself well to be applied to climate change in a broader sense. However, since the text of Article 212 closely mirrors that of Article 207, it makes little to no difference which provision is relied upon. For our purposes, both provisions have a role to play and can be applied in parallel, in a complementary rather than competing manner.

4 INTERPRETING UNCLOS IN LIGHT OF THE PARIS AGREEMENT

4.1 Introduction

Having analysed the Paris Agreement and UNCLOS, this section addresses the question how they interact, and what legal consequences flow from their combined application to the issue of marine environmental degradation as a consequence of climate change. In other words: what are the obligations of States to protect the marine environment from the effects of climate change? This question is addressed by analysing the two strands of regime interactions identified in Section 1, i.e. treaty-based and interpretation-based interactions. Following this distinction, the ensuing sub-section looks at how the Paris Agreement can formally be integrated into UNCLOS, by analysing the relevant conflict clauses and rules of reference. Thereafter, the interpretation-based interactions between the dynamic provisions in UNCLOS and the Paris Agreement are considered in detail.

4.2 Treaty-based interactions

As previously noted, UNCLOS contains two conflict clauses that dictate its relationship to other instruments: Articles 237 and 311. The former governs the relationship of UNCLOS Part XII *vis-à-vis* other treaties relating to the protection and preservation of the marine environment, whereas the latter applies to UNCLOS as whole.

Article 311 allows for the exercise of rights and obligations arising from any past or future agreement to which Convention members are a party, as long as the requirement of

¹⁰¹ Proelß (n 93) is of the view that the scope of this provision is limited to pollution from ships or aircraft. On the other hand, Harrison argues that ‘this provision has a broad scope and it covers both air pollution produced by all activities within the sovereign territory of a State’; see J Harrison, *Saving the Oceans through Law* (Oxford University Press 2017) 256.

¹⁰² In regard to the former, UNCLOS (n 11) art 211 is also relevant (Proelß (n 93) 1422), as well as Annex VI of MARPOL on the Prevention of Air Pollution from Ships.

compatibility is fulfilled, which essentially grants prevalence to UNCLOS and safeguards that parties do not exercise conflicting rights and obligations arising from other treaties or restrict the enjoyment of rights and the performance of obligations by fellow parties to the Convention.¹⁰³ There can be little doubt that the Paris Agreement is compatible with UNCLOS. Its objectives, i.e. limiting global temperatures to well below 2°C and adapting to the adverse impacts of climate change, are in line with UNCLOS' objective to protect and preserve the marine environment, and could be said to give effect to the duty to cooperate to this end.¹⁰⁴ Article 237 has a narrower scope, and merely applies to 'special conventions, with respect to the protection and preservation of the marine environment'.¹⁰⁵ The question thus arises whether the Paris Agreement can be qualified as such. Although the Paris Agreement's primary focus is not the protection and preservation of the marine environment, as clearly illustrated by the scarce textual attention paid to the oceans, the obligations flowing from it do relate to it, albeit indirectly. As shown in Section 1, the marine environment is heavily impacted by anthropogenic greenhouse gas emissions. Consequently, the mitigation thereof, which is among the objectives of the Paris Agreement, undeniably relates to the protection of the marine environment. It could therefore be argued that it is, indeed, a 'special convention' within the scope of Article 237. Parties to UNCLOS should thus carry out their obligations under the Paris Agreement 'in a manner consistent with the general principles and objectives of UNCLOS'. This provision has the effect of safeguarding a common standard of marine environmental protection, and simultaneously provides a mechanism for normative interaction between UNCLOS and the Paris Agreement, by allowing the integration of substantive provisions of the Paris Agreement within the overall framework of Part XII of UNCLOS.¹⁰⁶ This underlines a conclusion drawn in the previous section, namely that UNCLOS' growth is limited by its fundamental principles. Article 237 allows the incorporation of the Paris Agreement into Part XII *in principle*, within these limits, but leaves unanswered the question *how* this is done. To this we turn in the remainder of this section, starting with examining various avenues of treaty-based incorporation, i.e. rules of reference.

Articles 207 and 212 both incorporate external rules and standards through the use of rules of reference. They refer to 'internationally agreed rules, standards and recommended practices and procedures', which States must 'tak[e] into account' when adopting laws and regulations to combat atmospheric and land-based pollution.¹⁰⁷ The standard of conduct set by this provision is very mild, especially when compared to other provisions of Part XII. Take, for example, Article 211 concerning pollution from vessels, which requires States to adopt laws and regulations that 'at least have the same effect as that of generally accepted international rules and standards'.¹⁰⁸ Two questions arise here. First, which are the rules and standards to which Articles 207 and 212 refer; and second, what does it mean to take those rules into account?

As for the first question, having established that the substantive scope of Articles 207 and 212 has evolved to encompass greenhouse gas emissions, it can reasonably be argued that these provisions can be interpreted so as to refer to the UNFCCC and the Paris Agreement—a view that is widely supported scholarly literature.¹⁰⁹ In this respect, the relevant 'internationally agreed rules' are those of the UNFCCC and its associated instruments and measures. Problematically, however, the UNFCCC and the Paris Agreement do not lend themselves

¹⁰³ Proelß (n 93) 2015.

¹⁰⁴ UNCLOS (n 11) art 197.

¹⁰⁵ *ibid* art 237.

¹⁰⁶ Trevisanut et al, 'Introduction' (n 12) 12.

¹⁰⁷ UNCLOS (n 11) arts 207(1) and 212(1).

¹⁰⁸ *ibid* art 211(2).

¹⁰⁹ See, e.g., Harrison (n 8) 421, Boyle (n 8) and Scott (n 87) 394.

particularly well for incorporation as rules of reference, as they do not set any hard ‘standards’, nor do they contain ‘rules’ that set out clearly defined legal obligations. As shown in Section 2, the obligations that flow from the Paris Agreement are primarily procedural in nature, and the substantive obligations are highly differentiated. The provision that comes closest to setting a standard is arguably the temperature goal of the Paris Agreement as enshrined in Article 2 (1)(a). Although this provision sets a collective obligation that is not binding on the individual parties, this does not automatically mean that it is not binding on parties to UNCLOS. A unique characteristic of the rules of reference contained therein is that these external rules can become binding, even if States would otherwise not be bound to them—either because the rules are non-binding or because the State in question is not a party to that particular instrument.¹¹⁰ It is, however, difficult to argue that Article 2 of the Paris Agreement becomes legally binding through this mechanism, given that it only needs to be ‘tak[en] into account’.¹¹¹

This brings us to the second question: the standard of conduct required by these rules of reference. The phrase ‘taking into account’ is the weakest of the qualifications used concerning the States’ obligation with regard to internationally agreed measures.¹¹² Thus, States are granted significant leeway in adopting laws with regard to marine pollution from land-based and atmospheric greenhouse gas emissions, and are free to adopt less or more stringent measures. However, this only applies to States that are members to UNCLOS and *not* to the Paris Agreement. Such States are not required to comply fully with the UNFCCC and the Paris Agreement—at least not by virtue of Articles 207 and 212—but should take them into account when designing measures to combat harmful marine pollution from atmospheric or land-based greenhouse gas emissions. Needless to say, States that are bound to the Paris Agreement must comply with the obligations that flow from it regardless. As noted by Boyle, ‘any other view would make nonsense of participation in the Paris Agreement’.¹¹³

Thus, although the rules of reference enshrined in Articles 207 and 212 provide an opening through which the Paris Agreement and the UNFCCC regime more broadly can be incorporated into UNCLOS, their legal force is rather weak. States are merely required to take the Paris Agreement into account, which is a very lenient standard of conduct that, in effect, only applies to States that are not members to the Paris Agreement.¹¹⁴ The other strand of interactions (i.e. incorporation of the climate change regime through interpretation) bears more significance, as the following sub-section will show.

4.3 Interpretation-based interactions

It has previously been demonstrated that various dynamic provisions in Part XII (i.e. Articles 192, 194, 207 and 212) have evolved to encompass obligations in relation to climate change. It follows from the relevant case law that these are obligations of due diligence. Although the term ‘due diligence’ is not used in UNCLOS, it has been observed that the UNCLOS regime is

¹¹⁰ See ‘Articles Concerning the Law of the Sea with Commentary’ (1956) II Yearbook of the International Law Commission 265, 281, where the ILC expressly considered that ‘the more general expression ‘internationally accepted standards’ ... also covers regulations which are a product of international co-operation, without necessarily having been confirmed by formal treaties’.

¹¹¹ UNCLOS (n 11) arts 207(1) and 212(1).

¹¹² MH Nordquist et al, *United Nations Convention on the Law of the Sea, 1982: A Commentary*, vol I (Brill/Nijhoff 1991) 127.

¹¹³ Boyle (n 8) 468.

¹¹⁴ At the time of writing, there are only three States that are members to UNCLOS, but have not ratified the Paris Agreement: Iran, Libya and Yemen.

‘mostly based on the due diligence test’.¹¹⁵ Part XII in particular relies heavily on this concept. The abundance of due diligence obligations in Part XII derives directly from its nature and objectives. Part XII seeks to protect and preserve the marine environment, and this can only be done by controlling maritime activities, the majority of which are carried out by non-State actors. Thus, obligations of result are not fit to achieve the aims of Part XII, since the State has no direct control over these maritime activities. Instead, Part XII relies on due diligence, which is an obligation of *conduct* that requires the State to ‘deploy adequate means, to exercise best possible efforts, to do the utmost, to obtain this result’.¹¹⁶ Articles 192, 194, 207 and 212 all reflect obligations of due diligence, albeit in different ways. This follows from the way in which the obligations enshrined in these provisions are phrased. They state goals and objectives, i.e. to ‘ensure’, ‘protect and preserve’ and to ‘prevent, reduce and control’. Although the language used in Articles 192, 194 and 207 thus differs, they all reflect obligations of due diligence. The main difference between these provisions is their scope. Article 192 reflects a due diligence obligation to protect and preserve the marine environment from all the harmful effects of climate change; Article 194 focuses specifically on pollution to the marine environment; and Articles 207 and 212 focus on specific sources of pollution, i.e. land-based and atmospheric pollution. Taken together, they reflect a due diligence obligation to protect and preserve the marine environment from the harmful effects of greenhouse gases from all sources.

The question remains how stringent this due diligence obligation is. In other words: what is ‘duly’ diligent? It was recognized by the ITLOS Seabed Chamber that due diligence is a ‘variable concept’, the content of which ‘may not easily be described in precise terms’.¹¹⁷ Various factors can be identified, however, that inform the stringency of this due diligence obligation. This is where the UNFCCC framework—and the Paris Agreement in particular—come into play. Although the provisions that reflect this due diligence obligation do not expressly refer to any external standards, the existing body of environmental law nonetheless has a significant bearing on the content of this obligation. This follows from the application of the principle of systemic integration, as enshrined in Article 31(3)(c) VCLT.¹¹⁸ Pursuant to this principle, when interpreting a treaty provision in the context of an issue that falls within the scope of an external set of rules, these extraneous rules must be considered. Thus, since Articles 192, 194, 207 and 212 encompass climate change and pollution from greenhouse gas emissions—issues that are at the very core of climate change law—the Paris Agreement must be considered when interpreting the due diligence obligations that flow from these provisions. This view is supported by case law, in particular the *South China Sea Arbitration*, where the Tribunal found that the content of Article 192 is further detailed ‘by reference to specific obligations set out in other international agreements’.¹¹⁹

The question arises what it means to ‘consider’ the Paris Agreement when interpreting these provisions. The most obvious answer is that the Paris Agreement sets the standard of due diligence that is required by States in complying with Part XII of UNCLOS in relation to climate change and marine pollution from greenhouse gases. As discussed in Section 2, the Paris Agreement creates a due diligence obligation to design measures that are necessary, meaningful and effective. The standard of conduct is informed by the collective obligations enshrined in the Paris Agreement, most importantly the well below 2° C temperature goal and the principle of progression, which are to be interpreted in light of the principles of CBDR-RC and equity.

¹¹⁵ FO Vicuna, ‘State Responsibility, Liability, and Remedial Measures Under International Law: New Criteria for Environmental Protection’ in EB Weiss (ed.), *Environmental Change and International Law: New Challenges and Dimensions* (United Nations University Press 1992) 124.

¹¹⁶ *Sponsoring States Advisory Opinion* (n 57) para 110.

¹¹⁷ *ibid* para 117.

¹¹⁸ See Section 1.

¹¹⁹ *South China Sea Arbitration* (n 76) para 942.

Importantly, due diligence standards are set objectively, rather than subjectively.¹²⁰ Consequently, States can only be treated differently when this is prescribed by a specific norm. Thus, for the vast majority of developed States it could be argued that the measures they take to combat the harmful effects of climate change and marine pollution from greenhouse gases should reflect a pathway towards the well below 2°C temperature goal.

It could be argued that a more lenient degree of diligence is required, and that States merely need to consider the Paris Agreement in their efforts to protect the marine environment from the harmful effects of climate change, but that full compliance is not necessary. After all, the provisions discussed here do not directly incorporate the Paris Agreement through rules of reference that set minimum standards—as is, by contrast, done in other provisions, such as Article 211. Further, the standard of conduct set by Part XII, to ‘prevent, reduce and control’ and to ‘ensure’, is very general. Although there is some merit in this line of thought, it can be argued more convincingly that full compliance with the Paris Agreement is required, as a minimum, and that in some cases States may be required to take additional measures specifically designed to protect the marine environment from the harmful effects of climate change.

This follows from consideration of the other factors that inform the due diligence required of States. One such factor is the nature and degree of harm that would be suffered in the absence of due diligence by States.¹²¹ This was confirmed by the ILC, according to which the standard for due diligence should be ‘appropriate and proportional to the degree of risk of the transboundary harm’.¹²² In a similar vein, the ITLOS found in its *Sponsoring States Advisory Opinion* that ‘the standard of due diligence has to be more severe for the riskier activities’.¹²³ The threat posed to the oceans by climate change is immense, and it affects virtually every aspect of marine life. A due diligence standard that requires anything less than full compliance with the Paris Agreement—which, as we have seen, is not the most burdensome of treaties—would arguably not be proportionate to the degree of harm posed to the oceans by climate change. A related factor is the application of the precautionary approach. To return to the *Sponsoring States Advisory Opinion* case: the ITLOS Seabed Chamber found here that ‘the precautionary approach is also an integral part of the general obligation of due diligence’.¹²⁴ The precautionary approach, in its most common definition, entails that ‘where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation’.¹²⁵ Although the effects of climate change have become so tangible that some commentators argue we live in a ‘post-cautionary’ world,¹²⁶ significant scientific uncertainty remains in relation to the severity of the long-term cumulative effects of climate change. Application of the precautionary approach is therefore still warranted, and the standard of due diligence that flows from Part XII should be set accordingly.

Taking this line of argumentation one step further, it could even be held that full compliance with the Paris Agreement is not sufficiently precautionary. The first round of NDCs

¹²⁰ *Sponsoring States Advisory Opinion* (n 57) para 158.

¹²¹ L Rajamani, ‘Due Diligence in International Climate Change Law’ in H Krieger, A Peters and L Kreuzer (eds), *Due Diligence in the International Legal Order* (Oxford University Press 2021) 177.

¹²² ‘Draft Articles on Prevention of Transboundary Harm from Hazardous Activities’ (2001) II(2) Yearbook of the International Law Commission 148, art 3(13).

¹²³ *Sponsoring States Advisory Opinion* (n 57) para 117.

¹²⁴ *ibid* para 131.

¹²⁵ Rio Declaration on Environment and Development in ‘Report of the United Nations Conference on Environment and Development’ UN Doc A/CONF.151/26 (vol I) (12 August 1992) (Rio Declaration) Principle 15.

¹²⁶ L Heinzerling, ‘Climate Change, Human Health, and the Post-Cautionary Principle’ (2007) <https://scholarship.law.georgetown.edu/cgi/viewcontent.cgi?article=1003&context=ois_papers> 4.

submitted by States are estimated to lead to a 2.7° C temperature rise by the end of the century, which would have a catastrophic impact on the oceans.¹²⁷ The effects of climate change on marine ecosystems are already severe, after ‘only’ about a degree of warming.¹²⁸ The actions that are now being taken are thus not even sufficient to avert the adverse effects of climate change of which scientists are virtually certain they will occur.¹²⁹ There are, however, also effects of climate change which are still surrounded by scientific uncertainty, such as the collapse of the Gulf Stream.¹³⁰ Taking a precautionary approach to designing measures to combat the harmful effects of climate change on the marine environment, it can be argued that States should take due consideration of such effects in order to comply with their due diligence obligation under Part XII.

A related but distinct issue is that the Paris Agreement is not designed to protect the oceans from the harmful effects of climate change. Emphasis is placed on mitigation of greenhouse gases, and little attention is paid to the specific adverse effects of climate change and what can be done to combat those. Although in most cases reducing greenhouse gas emissions will, in effect, protect the marine environment from the adverse effects of climate change, this is not always the case. An example to illustrate this is the issue of ocean acidification. Ocean acidification is principally caused by CO₂ sequestration, which causes a decrease in oceans pH levels. The Paris Agreement does not provide any targets for CO₂ emissions or ocean pH values. Thus, States can, in theory, comply with their obligations under the Paris Agreement without making significant cuts in their CO₂ emissions, and, as a result, not meaningfully address ocean acidification.¹³¹ In the shorter term, the temperature goals of the Paris Agreement can be met by significantly reducing emissions of other greenhouse gases, and in the longer term, by using alternative means such as geoengineering.

Hence, there is a disjunction between the obligations of the Paris Agreement and those of Part XII of UNCLOS, since compliance with the former does not always effectively protect the marine environment from the adverse effects of climate change. The due diligence obligation under UNCLOS to ‘prevent, control and reduce’ pollution to the marine environment from greenhouse gas emissions is thus not always met when States fully comply with the Paris Agreement. This argument can be further substantiated by applying Article 207(5), which sets a particularly stringent standard of conduct (‘minimize, to the fullest extent possible’) in relation to the release of persistent harmful substances, such as CO₂. UNCLOS thus appears to set a more demanding standard of conduct—especially when applying the precautionary approach—and requires States to take specific measures in addition to their commitments under the Paris Agreement, insofar those commitments (i.e. their NDCs) do not sufficiently address the effects of climate change on the oceans. This may well be the case, given that, as we have seen, the Paris Agreement largely fails to consider the effect of climate change on the oceans. Importantly, although these obligations arise from interpretation with reference to the Paris Agreement, they are ultimately derived from UNCLOS and exist in parallel to the Paris Agreement. Thus, States that are a party to UNCLOS but not to the Paris Agreement are also, by virtue of their obligations under Part XII of UNCLOS, under a due diligence obligation to design measures that are necessary, meaningful and effective in light of the objectives and

¹²⁷ IPCC (n 4) 15–30.

¹²⁸ *ibid*; see also IPCC (n 1) 9–13.

¹²⁹ IPCC (n 4) 12–22.

¹³⁰ N Boers, ‘Observation-based Early-warning Signals for a Collapse of the Atlantic Meridional Overturning’ (2021) 11 *Nature Climate Change* 680.

¹³¹ Scott (n 87) 122.

principles enshrined in the Paris Agreement, and to take specific measures to address the impacts of climate change on the oceans.¹³²

This view is opposed by Boyle, who argues that UNCLOS Part XII requires States to implement the Paris Agreement, but does not require them to go beyond it.¹³³ Such an interpretation, he argues, would be incompatible with the doctrine of *lex specialis*. Further, this would be incompatible with Article 193 of UNCLOS, which refers to States' 'sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment'.¹³⁴ Although these arguments are deductively valid, it is argued here that a more nuanced view should prevail. The *lex specialis* doctrine entails that if a matter is being regulated by a general standard as well as a more specific rule, then the latter should take precedence over the former.¹³⁵ Applying this to the issues at hand, it does indeed seem to suggest that the Paris Agreement—as the more specific rule—should take precedence over Part XII of UNCLOS. This view is, however, oversimplified. In its report on the fragmentation of international law, the ILC found that 'the specific rule should be read and understood within the confines or against the background of the general standard'.¹³⁶ Thus, rather than incorporating the Paris Agreement directly into Part XII of UNCLOS, it should be interpreted against the background of its purpose, principles and rules. Interpreting the Paris Agreement in this context arguably means that States should take due consideration of the impact of climate change on the oceans, which requires them to take specific measures to this end. Such an interpretation is, contrary to Boyle's view, perfectly compatible with Article 193—which seeks to safeguard a certain margin of discretion for States in balancing their economic development against environmental protection. Interpreting the Paris Agreement whilst giving due consideration to marine issues does not necessarily require States to make deeper cuts in their emissions, it merely requires States to adopt a more diverse and refined set of measures. Such measures could include, *inter alia*, measures to combat ocean acidification,¹³⁷ establishing networks of marine protected areas to enhance the resilience of vulnerable ecosystems to the effects of climate change, and the protection of ecosystems that are important carbon sinks such as mangroves, seagrass and deep-sea deposition areas and enhanced scientific research on the cumulative impacts of climate change on the oceans.

5 CONCLUDING REMARKS

This article sought to identify States' obligations under UNCLOS to protect the marine environment from the harmful effects of climate change, by means of investigating the regime interaction between Part XII of UNCLOS and the Paris Agreement. Two strands of interactions have been explored, i.e. treaty-based interactions and interpretation-based interactions. The treaty-based interactions are significant in the sense that they provide various textual avenues through which the Paris Agreement is incorporated into UNCLOS. However, the legal

¹³² Evidently, such States (i.e. Iran, Libya and Yemen) cannot be held to comply with the procedural obligations set out in the Paris Agreement, for instance to submit NDCs and to provide a national inventory report of anthropogenic emissions by sources and removals by sinks.

¹³³ Boyle (n 8) 470–472.

¹³⁴ *ibid.*

¹³⁵ ILC (n 17) para 56.

¹³⁶ *ibid.*

¹³⁷ The most important way to combat ocean acidification is through reducing CO₂ emission. However, other measures can also be taken, such as growing sea plants like kelp, eelgrass, as these can effectively absorb CO₂ and reduce acidity in the ocean; see: F Chan et al, 'The West Coast Ocean Acidification and Hypoxia Science Panel: Major Findings, Recommendations, and Actions' (California Ocean Science Trust 2016) <<http://westcoastoah.org/wp-content/uploads/2016/04/OAH-Panel-Key-Findings-Recommendations-and-Actions-4.4.16-FINAL.pdf>>.

obligations that can be derived therefrom lack legal force, as they merely require States to take the Paris Agreement into account. This does not preclude stronger obligations being derived from interpretation-based interactions, which have, indeed, proven to be more significant. Given that these obligations flow from interpreting Part XII against the background of the UNFCCC regime, rather than direct incorporation thereof by means of rules of reference, these obligations ultimately resonate from UNCLOS and exist in parallel to the Paris Agreement. As such, States are required to take necessary measures to protect and preserve the marine environment from the impacts of climate change and prevent, reduce and control pollution from greenhouse gases. The standard of conduct that is required by States is largely informed by the Paris Agreement and the due diligence obligation that flows from it, which as shown in Section 2, requires States to design measures that are necessary, meaningful and effective to combat climate change. Although the standard of due diligence is set objectively, the content thereof is not symmetrical for all States. Rather, they are informed by the dynamic application of the principles of CBDR-RC and equity. It is argued here that this standard of conduct sets a minimum threshold, which, depending on the measures that States are taking to combat climate change (through NDCs or otherwise), may need to be supplemented by additional measures that are specifically designed to protect the marine environment from the adverse effects of climate change and pollution from CO₂. One may validly question whether such an interpretation of Part XII, which is, admittedly, ambitious, would not surpass the ‘natural limits’ of UNCLOS’ growth. As observed in Section 3, adaptation and change through interpretation should be in line with the fundamental principles embodied in the basic package deal. On the other hand, UNCLOS’ flexibility is not a mere coincidental consequence of the open-ended nature of its provisions. Part XII was purposely designed to adapt to changing circumstances and emerging challenges. Moreover, the obligations set out above are arguably still confined to its fundamental principles, and give effect to those of international cooperation and the protection and preservation of the marine environment. Thus, although by incorporating climate change-related obligations into UNCLOS through interpretation we find ourselves at the confines of UNCLOS’ capacity to evolve, it has arguably not yet been exceeded.

Another finding that merits mention is the apparent disjunction between the obligations of the Paris Agreement and those of Part XII of UNCLOS in relation to climate change, since compliance with the former does not always effectively protect the marine environment from the adverse effects of climate change. This article attempted to clarify the obligations that follow from the combined application of these partially overlapping instruments. The fact remains, however, that this particular legal subject—i.e. protecting the oceans against climate change—is not sufficiently addressed by either of the instruments discussed here. Although the due diligence obligation that flows from Part XII forms a useful starting point, significant uncertainty remains regarding the exact nature and extent of these obligations. Given the magnitude of the threat posed to the oceans by climate change, it is necessary to further specify the obligations placed upon States to protect the marine environment from the harmful effects of climate change.

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ecosystems, proposing a novel, integrated, and highly dynamic approach to their protection, which, he argues, is more apt to address the challenges that the dynamic nature of marine ecosystems present.