

***Amicus curiae* of the Observatory for Marine and Coastal Governance**
**Expanding the UNCLOS *corpus juris* to integrate the regulatory framework for climate change,
marine biodiversity protection and environmental principles, based on marine justice in the
context of the anthropocene**

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The ITLOS advisory opinion on climate change, in response to the request submitted by the Commission of Small Island States on Climate Change and International Law, is an opportunity to expand the UNCLOS legal framework and its interpretation, in order to integrate a *corpus juris* that connects the obligations of the law of the sea with the legal framework of climate change and environmental principles, as well as the regulatory frameworks for the protection of marine biodiversity to ensure its sustainable use and equitable access to it. In addition, this *corpus juris* should start from the recognition of marine justice in the context of the anthropocene and the differentiated impacts of climate change on developing countries, small island states, and countries with coastal zones and flood risk.

In order to contribute to the conceptualization of this comprehensive *corpus juris*, this *amicus curiae* brief is divided into three parts:

- The first explains how the anthropocene approach serves to understand the differentiated responsibilities and impacts of climate change, and presents the marine justice rationale for expanding the UNCLOS *corpus juris* in the context of climate change.
- In the second part, and in order to contribute to the response of the advisory opinion on the obligations of States in the face of climate change caused by anthropogenic emissions, the reasons that justify the comprehensive and systematic interpretation of the *corpus juris* of UNCLOS from the legal point of view are presented. This takes into account recent developments in international law that highlight the impacts of climate change on the oceans and their importance as carbon sinks. A broad interpretation of the UNCLOS term pollution, which by extension includes GHG emissions, is also proposed. This part proposes an interpretation of UNCLOS based on environmental principles and presents the normative framework that would integrate this *corpus juris*.
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- In the third part, in order to contribute to the response to the advisory opinion on the obligations of States to protect and preserve the marine environment in relation to climate change impacts, an interpretation of UNCLOS and the duty to protect marine ecosystems in the context of climate change is proposed. This is in addition to the regulatory frameworks on marine biodiversity protection that have been negotiated in

different international fora and that serve to complement the *corpus juris* of UNCLOS and its interpretation.

I. UNCLOS *corpus juris* based on marine justice in the context of the Anthropocene

This first part of this *amicus* brief is divided into two parts: the first part explains the anthropocene approach to understanding the differentiated impacts of climate change among countries, which underpins the approach that the responsibilities of States should also be differentiated. This is further connected to one of the components of marine justice on the obligations of developed countries towards developing countries, small island states, and countries with coastal zones and at risk of flooding; the second part approaches the concept of marine justice from three elements: participatory and distributive justice, which is part of environmental justice, as the foundation of marine justice; the differentiated obligations of developing countries in the face of the unequal impacts of climate change and ocean degradation, considering the most vulnerable countries (small island states, countries with coastal zones and at risk of flooding, for example) and vulnerable populations in coastal and island zones within countries; and the recognition of artisanal fishing communities as collective subjects of rights and vulnerable subjects in the face of climate change.

A. The anthropocene geologic era approach to understanding the differentiated responsibilities and impacts of climate change

The Anthropocene geological era proposal, in general terms, points out that the effects of human activities due to anthropogenic carbon dioxide emissions on the global environment have escalated, which means that the global climate may deviate significantly from the natural behavior for many millennia (Crutzen, 2002). The proposal implies human responsibility for the destruction of the planet and also opens fundamental debates on the insufficiency of actions to reduce the negative impact of human activities on the planet, and specifically on the oceans, while the effects are increasingly irreversible.

The Anthropocene has not only been a scientific concept reserved for academic discussions, but has also permeated global scenarios of follow-up to international commitments of States, such as the reports of the Intergovernmental Panel on Climate Change (IPCC). The IPCC's special report on "the impacts of global warming of 1.5°C above pre-industrial levels and the corresponding trajectories that global greenhouse gas emissions should follow, in the context of strengthening the global response to the threat of climate change, sustainable development and efforts to eradicate poverty" of 2019, among others, analyzed the feasibility conditions for

limiting global warming or adapting to it. For such analysis, the IPCC established that the Anthropocene is a unifying approach, admitting that "there are profound and differential human influences, albeit of increasing geological significance, on the Earth system as a whole" (IPCC, 2018).

This report is fundamental in the follow-up to the Paris Agreement since it emphasizes the irreversibility of the loss of ecosystems and the need to increase the ambition of the States. In this regard, the report

also shows that recent emissions trends and the level of international ambition shown by the Nationally Determined Contributions under the Paris Agreement deviate from a trajectory consistent with limiting warming to less than 2°C. Without an urgent increase in mitigation ambition in the coming years to drastically reduce greenhouse gas emissions by 2030, global warming will exceed 1.5 °C in the coming decades and will result in the irreversible loss of the most fragile ecosystems and one crisis after another will affect the most vulnerable people and societies.(IPCC, 2018)

More specifically, the IPCC issued the special report entitled "The Ocean and Cryosphere in a Changing Climate" and among the variables considered by the report are: the importance of the ocean as a carbon sink; sea level rise; the need for mitigation and adaptation in the face of environmental displacement caused by such increase; the alarming changes in ocean ecosystems and their relationship with species survival (IPCC, 2019). The fact that the IPCC has pointed out the above is of enormous relevance in climate change negotiations and especially in giving the oceans their rightful place.

Fortunately, the IPCC report was not an isolated event, but adds to other international developments in the follow-up to the international framework on climate change, in which the anthropocene is serving as a focus (developments in the policy framework are developed in the second part of this *amicus* brief). Perhaps the anthropocene is not cited in all documents, but clearly its inclusion in the 2019 IPCC report on the impacts of global warming of 1.5 °C (which certainly marked a milestone among the reports of this Panel) (IPCC, 2018), sets a guideline to, on the one hand, overcome the denialist currents of the anthropogenic origin of climate change, and on the other hand, force States (and thus individuals) to stop contributing to it.

However, the responsibilities and obligations in the face of climate change, and the environmental burdens and benefits in general, are not the same for all States, communities

and individuals. Unfortunately, those who bear the greatest burdens are usually the most disadvantaged and vulnerable, with the least capacity for adaptation and mitigation, and the least responsible. Circumstances such as poverty, geographic location, differentiated levels of development, are aggravated by climate change.

Therefore, the Anthropocene cannot be used to position a dangerous generality that ignores environmental injustice, conditions of social and geographic vulnerability, and cultural diversity, among others. This is because the "human influence" in the Anthropocene has not been equal. Just to cite a few examples, many coastal and island communities in developing countries have little capacity for adaptation and mitigation and live in poverty; artisanal fishermen see a decrease in marine species and thus their livelihood possibilities; indigenous peoples see their ecological calendars affected by climate change and at the same time are the guardians of the forests in their territories; Afro-descendant communities living in the Pacific and the Caribbean in Latin America see their cultural relationship with the sea threatened.

In short, the negative impacts of human activity affect a historically and socioculturally unequal planet. Therefore, the concept of the Anthropocene deserves a social reading, based on justice and ethnocultural aspects, that differentiates responsibilities. This *amicus* brief falls short of such a broad reading, but does address marine justice as a basis for the *corpus juris* of UNCLOS in the Anthropocene framework below.

B. Some marine justice rationale for the *corpus juris* of UNCLOS

The concept of marine justice is relatively new, conceived as a paradigm, and a movement that merges concerns for the marine environment and environmental justice (Martin et al., 2019; Bennett et al., 2022). In a way, the concept of marine justice is an extension of environmental justice to give relevance to environmental and climate impacts and injustices regarding the use of marine biodiversity and marine pollution, as well as to generate proposals in this regard that consider the rights of vulnerable coastal and island communities, and the responsibilities of developed countries towards small island states, and countries with coastal zones and at risk of flooding.

From environmental and climate justice, it is proposed that the causes and effects of climate change should be treated as an ethical issue and with justice in the framework of international negotiations (Johannessen, 2015), recognizing inequalities in wealth, power and the contribution of States to environmental degradation (Peel, 2016). In order to understand marine justice, it is necessary to apply these approaches to issues related to threats and damage to the

marine environment, and risks to coastal populations, in the context of the anthropocene. For example, five areas of marine injustice in the oceans have been identified: 1) pollution and toxic wastes, 2) plastics and marine debris, 3) climate change, 4) ecosystem, biodiversity and ecosystem service degradation, and 5) fisheries declines. Environmental (in)justice in the Anthropocene ocean (Bennett et al., 2023).

There are also several ways to refer to this new paradigm of justice, such as ocean justice, ocean equity, blue justice, all to refer to the relationship between equity, justice, and the oceans (Bennett, 2022). For this *amicus* brief, reference is made to marine justice, from a practical vision, without distinguishing between oceans and seas technically, but rather welcoming the vision of local coastal communities, Afro-descendant communities, indigenous communities, and those dedicated to artisanal fishing for example, who refer to the sea as a whole, as that part of the planet that is lost from sight on the horizon, and with which they relate from the coasts in a geographic, biocultural, artisanal and also spiritual and ancestral way.

There are many elements of marine justice that can be enunciated both to differentiate environmental burdens and benefits, and the differentiated impacts of climate change within and between countries, including the guarantee of human rights (which is addressed in the second part of this *amicus* brief). The following are enunciated for this *amicus* brief:

- Participatory justice and distributive justice, which are part of environmental justice, to support marine justice.
- The differentiated obligations of developing countries in the face of the unequal impacts of climate change and ocean degradation, considering the most vulnerable countries (small island states, countries with coastal zones and flood risk, for example) and vulnerable populations in coastal and island zones within countries.
- Recognition of artisanal fishing communities as collective subjects of rights and vulnerable subjects in the face of climate change.

These elements are developed below in the order listed above.

1. Participatory justice and distributive justice, as part of environmental justice, to underpin marine justice

Environmental justice has managed to position itself as one of the most important foundations to achieve the guarantee of environmental rights, as well as greater equity and environmental sustainability (Sánchez, 2019). Similarly, in the conceptualization of this justice, not only a

differentiation between environmental burdens and benefits, and responsibilities in the face of climate change and environmental degradation, but also the elimination of discrimination for any reason has been raised (Maya-Aguirre, 2018). Constitutional courts such as the Constitutional Court of Colombia have stated that the demand for distributive justice advocates eliminating factors of racial, gender or ethnic origin discrimination (recognition injustices), or socioeconomic status or belonging to countries of the North or the global South (redistribution injustices) (Constitutional Court of Colombia, Ruling T-294/14).

Environmental justice, broadly speaking, is composed of four elements: distributive justice, which implies the equitable distribution of environmental burdens and benefits without discrimination, and including mitigation and compensation alternatives for communities; participatory justice, which implies that environmental decisions are made with the active participation of communities; the principle of sustainability, according to which economic and social systems must be viable, without causing deterioration of ecosystems and respecting the limits and generation of the environment; the principle of sustainability, according to which economic and social systems must be viable, without causing deterioration of ecosystems and respecting the limits and generation of the environment, which translates into respect for future generations (intergenerational responsibility); and the precautionary principle, which states that in the absence of scientific certainty about the impacts of an activity, one should choose to refrain from carrying it out (Mesa, 2018; Sanchez 2019; Sanchez 2019a). How distributive justice and participatory justice can inform marine justice is explained below, while the principles will be addressed in the second part of this *amicus* brief.

Distributive justice would imply understanding, based on equity, proportionality and compensation, unequal relationships in relation to factors such as: the differences between the contribution to ocean degradation and climate change between countries, and between sectors within the same countries; inequitable access to marine biodiversity between countries (taking into account factors such as development, geographic position - access to coastline or not -, and within countries (differences for example between access to industrial vs. artisanal fisheries); the higher environmental costs borne by vulnerable countries and communities associated with access to the sea. Based on the above, environmental justice should be the support for achieving equity and sustainability, taking into account these factors and, in particular, for avoiding socio-environmental conflicts arising from them.

Participatory justice, as a second component of environmental justice, implies meaningful participation of citizens in decision-making (Constitutional Court of Colombia, Decision T-021/19). Applying the participatory dimension of environmental justice in marine justice

highlights the rights of artisanal fishing communities to participate in decisions on fisheries governance, sustainable management of coastal spaces, marine spatial planning, mitigation and adaptation to climate change and risk management, and in general, in all decisions that concern them.

In the same sense, the concept of environmental justice implies limits to appropriation, so that it is sustainable. Therefore, reference is made to the sustainable and equitable use of marine biodiversity; the *equitable* character, in which the factors of distributive justice are considered, and *sustainable*, without jeopardizing the satisfaction of the needs of future generations, emphasizing that both adjectives are linked to the concept of marine justice.

2. The differentiated obligations of developing countries in the face of the unequal impacts of climate change and ocean degradation, considering the most vulnerable countries and vulnerable populations in coastal and island areas within countries.

The obligations of States in the face of climate change (which will be explained in the second part of this *amicus* brief) are cross-cut by the principle of common but differentiated responsibilities, one of the fundamental principles of sustainable development, which is based on the need to differentiate between the obligations of the countries that contribute most to environmental pollution and today to climate change, and those that suffer from these effects. From this arises the principle of common but differentiated responsibilities. As stated in Principle 9 of the Rio Declaration

States shall cooperate in a spirit of global solidarity to conserve, protect and restore the health and integrity of the Earth's ecosystem. Because they have contributed to varying degrees to the degradation of the global environment, States have common but differentiated responsibilities. Developed countries recognize their responsibility in the international pursuit of sustainable development, given the pressures their societies place on the global environment and the technologies and financial resources at their disposal (United Nations, 1992).

According to this principle, in order to overcome environmental problems, in particular the effects of climate change, the cooperation of all countries is required; but taking into account that there are States whose societies exert more pressure on the global environment because they contribute more to pollution, and usually have greater economic and technological capabilities, than those that suffer the effects of pollution (Peel, 2016). For example,

greenhouse gas emissions affect the entire atmosphere, because the effects are not restricted to the country that produces and contributes to these emissions, nor are they restricted to a single site (Cardozo, 2017), the truth is that there is an inequity in the current and future damage caused by them, since the traditional industrialized nations are the ones that have emitted the most and have a historical responsibility for it (Johannessen, 2015).

The application of the principle of common but differentiated responsibilities must take into account the differences between countries based on their development and geographic location, factors in which access to the oceans plays a determining role.

The traditional classification is as follows: developed and developing countries. Among the factors for measuring development, the traditional one is based on measuring the country's income; however, the need has arisen to incorporate development factors that take into account the opportunities that people have to live an adequate standard of living. From this arises the measurement of human development of the United Nations, which considers factors such as: enjoying a long and healthy life, access to education and decent standard of living (UNDP, 2014-2015). Currently, the concept of development has been extended to capabilities given by access to technology, resilience to crises and quality education, among others (UNDP, 2019).

In addition to the above classification, developing countries can be identified that are more vulnerable to climate change and natural phenomena, depending on their geographic location, such as Small Island Developing States (SIDS). Given the high risk in which these countries live, which affects the very survival of their inhabitants and the possibilities of development, priorities have been established in international instruments, such as the Barbados Program of Action for the Development of Small Island States (United Nations, 1994), the Mauritius Strategy for the Further Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States (United Nations, 2005), and the Mauritius Strategy to Address the Vulnerability Factors of Small Island Developing States (General Assembly of the United Nations, 2008).

There is also a recognition of landlocked countries, whose development possibilities may be limited by this geographical location. For these countries, special measures have also been taken such as the Vienna Program of Action for Landlocked Developing Countries (United Nations, 2016).

The classification between developed and developing countries, and within the latter, small island states and landlocked countries, is expressed in the rules of the United Nations Framework Convention on Climate Change, in short UNFCCC, which are based on two factors related to the oceans: access to them is a determining factor in development and, at the same time, a factor of vulnerability. The UNFCCC is based on the considerations of General Assembly resolution 44/206 of 22 December 1989 on the possible adverse effects of sea level rise on islands and coastal areas, especially low-lying coastal areas (United Nations General Assembly, 1989), and recognizes that low-lying countries, small island states, countries with low-lying coastal areas or areas prone to flooding, countries with areas prone to natural disasters, countries with fragile ecosystems and landlocked countries are particularly vulnerable to the adverse effects of climate change.

Based on these recognitions, developed countries have obligations to these States to: cooperate with measures to adapt to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management; and consider measures, including those related to financing, insurance and technology transfer, to address the specific needs and concerns of developing countries arising from the adverse effects of climate change or the impact of the implementation of response measures (Article 4 of the UNFCCC).

Similarly, it should be considered that there are developing countries with non-island coastal zones, or countries that have islands within their jurisdiction, whose communities face climate change in vulnerable conditions. This circumstance should be a criterion when interpreting the obligations of developed countries within the framework of the anthropocene and based on marine justice. For example, climate change should be considered as a factor of environmental displacement in coastal zones, with special attention to the unequal burdens of climate change effects on particularly vulnerable populations, including, among others, women and children¹.

3. Artisanal fishing communities as collective subjects of human rights and vulnerable subjects in the face of climate change.

One of the examples of environmental injustice noted above is that of fisheries declines, whose impacts are greatest for small-scale fishing communities and lower income nations (Bennette et al., 2023), and in particular for artisanal fishers. While they contribute to food security to a large extent, they bear the burdens of pollution and destruction of the marine environment, which

¹ These considerations have been previously pointed out in reports presented by the Observatory for Coastal Marine Governance to United Nations rapporteurs. Available at: <https://www.ceambientales.org/qu%C3%A9-hacemos/Gobernanza-Marina-Costera>

reduces their livelihood possibilities. On the one hand, the vulnerability of the artisanal fishing trade in the context of climate change must be recognized, while at the same time recognizing that artisanal fishing communities are collective subjects of human rights, as a basic component of marine justice.

In this regard, SDG 14 specifically recognizes artisanal fishers as subjects in international law. Target 14.7.1 specifically mentions artisanal fishermen and fisherwomen, and states that access to marine biodiversity and fair markets must be ensured. This is a major step towards guaranteeing their rights and recognizing their contribution to the local economy, food security and the preservation of traditions and customs linked to this type of fishing, as well as highlighting a social component of this objective, complementary to the content of the scientific goals more associated with conservation (Maya-Aguirre, 2022).

In addition to the implementation of SDG 14 target 14.7.1, it is necessary to incorporate the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (FAO, 2015), in short the SSF Guidelines. The SSF Guidelines recognize the need for the responsible use of resources in order to meet the needs and developmental needs of present and future generations. Similarly, the Guidelines lay the foundation for the assurance of secure tenure rights to resources that form the basis for the social and cultural well-being, livelihoods and sustainable development of artisanal fishing communities. The Guidelines also support an equitable distribution of benefits from responsible fisheries and ecosystem management that benefits small-scale fishers and fishworkers, both men and women.

Regarding the rights of artisanal fishers, emphasis is placed - not in an exhaustive manner but rather by way of illustration - on the right to science, the right to food security and sovereignty, work, equity, access to participation and access to information, and the rights of future generations. For example, the right to science is fundamental for artisanal fisheries, to the extent that scientific information that reaches communities in a friendly language offers better possibilities for responsible artisanal marine fisheries in terms of species conservation and ecosystem management. Likewise, given the effects of climate change and ocean pollution, scientific information is vital to generate adaptation and mitigation processes, as well as restoration strategies (Observatory for Coastal Marine Governance, 2021). In addition, the right to science is intrinsically related to access to information and, linked to this, access to participation in decision-making. On the occasion of the United Nations Conference on Oceans, organizations and individuals from different countries signed a joint civil society declaration stating that the right to science should be a catalyst to achieve sustainable and equitable access

to marine biodiversity for artisanal fishermen and fisherwomen (Observatory for Coastal Marine Governance, 2022).

II. UNCLOS corpus juris in conjunction with environmental principles, climate change policy framework and human rights framework

In order to contribute to the answer to the question in the request for an advisory opinion on the obligations of States in the face of climate change, this part of the *amicus* brief sets out an interpretation of the UNCLOS standards based on environmental principles and complementarity with the climate change normative framework. It also argues that the human rights normative framework is complementary to understanding environmental obligations under UNCLOS.

A. UNCLOS, environmental principles and International Law

The regulatory climate regime is evolving to pay greater attention to the ocean-climate relationship, both in terms of mitigation and in terms of impact. Notably, 70% of the 161 States that have submitted Nationally Determined Contributions (NDCs) under Article 4(2) of the 2015 Paris Agreement specifically address marine issues. Fifty NDCs address climate change mitigation in the oceans, in addition to adaptation, and actions taken to mitigate climate change, in particular CO₂ emissions, will directly or indirectly address ocean acidification. At the 2016 UNFCCC Conference of the Parties (COP 22), the ocean was designated as one of nine Global Climate Action Events, and GOA-ON, a collaborative network of institutions conducting research on ocean acidification processes to inform policy development, was established. States Parties to the UNFCCC (along with other stakeholders, including UN-Oceans) also adopted *A Strategic Action Roadmap on Oceans and Climate: 2016-2021* that sets out six policy recommendations related to the role of oceans in climate, mitigation, adaptation, displacement, finance and capacity building. In 2017, at COP 23, the *Oceans Pathway Partnership* was launched, which endorses a twin-track strategy: to increase consideration of the oceans in UNFCCC processes and increase action in priority areas that impact or are impacted by oceans and climate change (Scott, 2020).

Indeed, the important nexus between climate change and the ocean was recognized in the Glasgow Pact, the final decision of the 2021 UN Climate Change Conference, and the role that the law of the sea can play in climate change mitigation and adaptation has received increasing attention over the past decade.

Despite the above, the relationship between climate change and the oceans is not expressed in all international law conventions, especially those that were signed before climate change became one of the main challenges for human societies. For this reason, it is necessary to reflect on the appropriate way to interpret these treaties in the light of the evolution of scientific knowledge and the principles governing international law.

To understand the obligations under UNCLOS, it is necessary to understand this treaty within the framework of the principles of international law, as well as to refer to the general normative framework on climate change.

1. Environmental Principles for the Interpretation of the *corpus juris* of UNCLOS

The interpretation of UNCLOS may be guided by a set of principles that help to clarify the scope of the obligations established by this convention. In any case, it is relevant that the obligations contained in UNCLOS be interpreted in the light of the principles of international law. In this case, there are three principles to be taken into account: a) the principle of non-detriment, b) the precautionary principle, c) the principle of shared but differentiated responsibilities, and d) the principle of intergenerational equity. These principles make it possible to determine the duties of care that States would have in implementing the environmental protection obligations contained in UNCLOS.

UNCLOS systematizes some of these principles and, at the same time, these principles allow the interpretation of the scope of obligations under UNCLOS. This issue is particularly relevant with regard to climate change, but even further with regard to a significant number of transboundary pollution cases. Among the principles that could be called upon are the principle of common but differentiated responsibilities and respective capacities according to national circumstances, the no harm principle or the precautionary principle (Maljean-Dubois, 2021; Mayer, 2018; Campbell-Durouflé, 2021).

A first principle to be taken into account is the principle of non-detriment. The customary and conventional nature of the no harm principle is now firmly established. As a general obligation of due diligence from which several procedural obligations derive, this principle has important consequences for States. As such, it forms the basis of international environmental law in general and international climate change law in particular (Maljean-Dubois, 2021; Mayer, 2018; Campbell-Durouflé, 2021).

The principle of non-detriment has been understood as a positive obligation, and more specifically as a duty of due diligence (an obligation of conduct and not of result). States must exercise due diligence to ensure to the greatest extent possible that activities carried out on their territory or within their jurisdiction do not cause harmful consequences to other States or to areas beyond national jurisdiction. In 2011, the Seabed Disputes Chamber of the International Tribunal for the Law of the Sea (ITLOS) interpreted this obligation as "an obligation to deploy appropriate means, to make best efforts, to do everything possible, to obtain this result." It is considered a broad and demanding obligation "involving not only the adoption of appropriate rules and measures, but also a certain level of vigilance in their implementation and the exercise of administrative control applicable to public and private operators, such as the supervision of the activities carried out by such operators". The obligation of due diligence thus requires States to regulate the conduct of private actors. This approach is all the more relevant in a matter such as climate change, where a State's direct obligation to deploy appropriate means may have an indirect impact on private actors, whose activities are responsible for a very large share of global GHG emissions (Maljean-Dubois, 2021; Mayer, 2018; Campbell-Durufié, 2021).

The do-no-harm principle was first recognized in a transboundary context, but it also applies to global threats such as climate change. As some researchers point out, "the rationale justifying the prevention of activities that cause local transboundary harm applies *a fortiori* to circumstances where the stakes include the prosperity, viability or survival of other states and of human civilization as a whole." On the one hand, since GHGs diffuse rapidly through the atmosphere, the effects of emissions are not related to the location of their source. Thus, an increase in GHGs in one country or region of the world has diffuse consequences throughout the planet. On the other hand, scientists are increasingly able to attribute specific extreme weather events to anthropogenic GHGs. The causal relationship is even easier to establish in the case of slow-evolving phenomena, leading to the "sinking" of island states, the transformation of ecosystems or changes in traditional land use (Maljean-Dubois, 2021; Mayer, 2018; Campbell-Durufié, 2021).

It is also well established that several procedural obligations arise as corollaries of the general obligation of due diligence: information, notification, cooperation, impact assessment and continuous monitoring. Particularly relevant in the context of climate change, this set of procedural obligations leads States, on the one hand, to cooperate and, on the other hand, to continuously assess, monitor and improve their climate policy, taking into account scientific and technological developments (Maljean-Dubois, 2021; Mayer, 2018; Campbell-Durufié, 2021). These obligations are consistent with the general obligation to protect the marine environment.

On GHG emissions, there is no conflict or inconsistency between the principle of do no harm and obligations under climate treaties. The Paris Agreement says nothing different from customary law - in particular, it does not create any legal right or entitlement to emit any amount of GHGs. On the contrary, the parties' acceptance of the principle of do no harm is reflected in the preamble of the UNFCCC, which recalls that States "have a responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction." The objective of the UNFCCC, to which both the Kyoto Protocol and the Paris Agreement refer, is to "achieve [...] stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". To avoid any risk of misunderstanding, some States - including the Pacific small island States - have made declarations specifying, for example, that their ratification "shall in no way constitute a waiver of any of the rights recognized by international law in relation to the responsibility of States for the adverse effects of climate change, and that nothing in the Convention may be interpreted as derogating from the principles of general international law" (Maljean-Dubois, 2021; Mayer, 2018; Campbell-Durufilé, 2021).

In practice, conventional and customary due diligence obligations feed back and illuminate each other. The 2016 award in the South China Sea case perfectly reflects the mutually reinforcing relationship that can exist between these different types of obligation: in this case, the Tribunal considered that the no harm principle "informs the scope of the general obligation in Article 192" of UNCLOS (Maljean-Dubois, 2021; Mayer, 2018; Campbell-Durufilé, 2021). Since the principle of non-detriment is a due diligence obligation, a State may be held liable on the basis that it has failed to take adequate measures to prevent adverse impacts on the climate system, i.e. to adequately regulate emitting activities carried out within its jurisdiction. In its substantive and procedural dimensions, the obligation provides a legal basis for State liability claims in relation to damages arising from climate change. Beyond its preventive function (Maljean-Dubois, 2021; Mayer, 2018; Campbell-Durufilé, 2021).

As a complement to the above, it can be stated that States have due diligence obligations to prevent pollution of the seas and oceans by land-based means that may cause serious transboundary environmental damage. UNCLOS contains provisions that impose general obligations as well as specific obligations, so it is not expected to contain detailed provisions for each case to which it may apply. Rather, States have "obligations" to prevent marine pollution from land-based sources under UNCLOS. Indeed, States have certain obligations to prevent marine pollution from land-based sources under Part XII of UNCLOS and customary law, and due

diligence obligations could fill part of the gap left by the lack of implementation of UNCLOS Articles 207 and 213, as well as UNCLOS Articles 194 and 207 (Takano, 2017).

The 2011 Advisory Opinion of the ITLOS Seabed Disputes Chamber (concerning the "responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area") provides fundamental guidance for the interpretation of the statement that "States shall take all necessary measures to ensure [that activities under their jurisdiction or control are so conducted as not to cause pollution damage to other States and their environment]" in the Convention. It stresses that "responsibilities to ensure" are "due diligence" obligations, meaning that a State must take all measures available to it within its legal system, such as adopting "appropriate laws and regulations to ensure compliance by persons under its jurisdiction." In other words, as the ITLOS Advisory Opinion concludes, it is an obligation to deploy appropriate means, to exert best efforts, to do everything possible, to obtain the result (Takano, 2017).

The same Advisory Opinion also referred to the direct obligations to assist the competent authority, to apply a precautionary approach, to apply best environmental practices, to take measures to ensure the provision of guarantees in the event of an emergency order from the authority for the protection of the marine environment and to provide for a remedy for compensation in relation to pollution damage. Furthermore, the Seabed Disputes Chamber explicitly states that the application of the precautionary approach is a legal obligation as an established legal principle, if not a common law rule, and draws attention to the link between the precautionary approach and due diligence obligations (Takano, 2017).

UNCLOS courts and tribunals have interpreted this general obligation to protect the marine environment as not limited to "pollution" in the strict sense, but as including the preservation of ecosystems and biodiversity, an interpretation in line with subsequent developments in international (environmental) law following the adoption of UNCLOS. As regards the effects of climate change on the marine environment, it is important to note that the general obligation in Articles 192 and 194 covers "all sources of pollution", including land-based sources and pollution "from or through the atmosphere". It seems indisputable that oceanic absorption of atmospheric greenhouse gas (GHG) emissions can be considered "pollution of the marine environment" (Roland Holst, 2023). This term is broadly defined in UNCLOS as

the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which causes or is likely to cause harmful effects such as damage to living resources and marine life, hazards to

human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, deterioration of the quality for use of seawater and reduction of services.

At least from a scientific point of view, it is clear that oceanic absorption of CO₂ (a "substance") alters the chemistry of the oceans, causing, among other things, their acidification and deoxygenation. In addition, GHGs add "energy" to the marine environment, which causes ocean warming, thermal expansion and, combined with the melting of the cryosphere, aggravates sea level rise ("indirect" effects). In other words, the "harmful effects" on the marine environment, human health and economic activities are obvious, and atmospheric GHGs seem to fit the definition of "pollution" (Holst, 2023). Thus, it is possible to conclude that the due diligence standard of the do-no-harm principle is applicable to the interpretation of States' obligations under UNCLOS.

Another important principle for understanding the UNCLOS obligation is the precautionary principle. Principle 15 of the Rio Declaration on Environment and Development (Rio Declaration) of the 1992 United Nations Conference on Environment and Development codified the precautionary approach and stated that lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. Although the incorporation of the precautionary approach can be found in treaties such as the Convention on Biological Diversity and the Climate Change Convention, the principle of the precautionary approach has been used in case law. The precautionary approach-as an important principle and obligation-does feature in some regional conventions, such as the OSPAR Convention (Article 2)⁸ and the 1992 Helsinki Convention (Article 3(2)).⁹ Although in some regions its application may still be seen as causing tensions between environmental protection and economic development, it is recognized as a useful enforcement measure for use in pollution control through regional conventions, along with reporting systems and environmental impact assessments (Takano, 2017).

The ITLOS had noted that States must "act with prudence and caution" to protect the environment, for example, in ITLOS Cases Nos. 3 and 4, Order of 27 August 1999, Southern Bluefin Tuna, para. 77, and in the Advisory Opinion, Responsibilities and Obligations of States Sponsoring Persons and Entities with Respect to Activities in the Area (Case 17), of 1 February 2011. In the South China Sea Arbitration case, there was no reference to the precautionary approach in the Award, although the Philippines argued that China was obliged to apply the precautionary approach (Takano, 2017).

Regarding land-based marine pollution, after examining the definition of the Rio declaration and previous cases, it is possible to consider that the precautionary approach would be applied if the pollution could cause irreversible damage, as in the case of land-based pollution, greenhouse gas emission can be considered a form of pollution that should be controlled by States to avoid damage to other States from a precautionary perspective. More importantly, the approach could be applied more broadly, i.e., States should take precautionary measures to prevent and protect the marine environment in general (Takano, 2017).

The principle of intergenerational equity could play an active role by significantly increasing the level of action needed to address a potential risk to the marine environment that compromises the interests of future generations. Intergenerational equity and the duties of present generations to future generations have long been recognized as fundamental principles of international environmental law. They imply duties to regulate corporate activities that negatively impact the rights of future generations and duties of the State to consider intergenerational equity in government actions affecting climate change.

2. Integration of the Climate Change Policy Framework with UNCLOS

The following are the ocean protection obligations in the climate change policy framework, which are complementary to UNCLOS and should be integrated into the *Corpus Juris* addressed in this *amicus* brief.

2.1. United Nations Framework Convention on Climate Change and the protection of the ocean

The United Nations Framework Convention on Climate Change (UNFCCC) (United Nations, 1992a) was adopted at the Earth Summit or World Conference on Sustainable Development in Rio in 1992. This summit was a milestone in international environmental law, among other reasons because it adopted sustainable development as a principle and because it adopted five international instruments on central issues in environmental law, including the UNFCCC. The other four international instruments are: the Rio Declaration on Environment and Development, one of the most important international instruments, which establishes a series of principles, such as sustainable development, participation, access to information, polluter pays (United Nations, 1992); Agenda 21, which is an action plan that seeks to give effect to the Declaration (United Nations, 1992b); the Convention on Biological Diversity, which has as its objectives the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising from the utilization of genetic resources (United

Nations, 1992c); the Forest Principles, which contain recommendations for forest conservation and sustainable development based on a sound land-use policy (United Nations, 1992d). Each of these international instruments paved the way for the construction of normative frameworks that develop the object of each instrument (forests, biodiversity, climate change) and have been developed by protocols, instruments, resolutions and goals.

The UNFCCC is based on a concern that human activities have increased the concentration of GHGs in the atmosphere, the consequent intensification of the greenhouse effect and the additional warming of the surface and the atmosphere, which affects ecosystems and humankind. Based on this concern, the UNFCCC adopts a definition of anthropogenic climate change as follows: "Climate change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (United Nations, 1992a).

The objective of the UNFCCC is to achieve "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (Article 2). To this end, it is proposed that States not only have the responsibility to ensure that the activities of individuals do not cause damage to the environment within their jurisdiction, but also to the environment of other States or areas outside their national jurisdiction. This broad definition of responsibility highlights aspects such as transboundary damage or damage occurring at sea beyond national jurisdiction (recitals) (United Nations, 1992a).

The first is the express recognition of the role of coastal ecosystems in the face of climate change and the consequent measures that are mandated with respect to that role; and the second is the reference to the oceans to determine the particular risks of countries that have access to them.

Marine and coastal ecosystems as carbon sinks and GHG reservoirs

The UNFCCC starts from the consideration and recognition that marine ecosystems (like terrestrial ecosystems) play an important role in climate change: they are carbon sinks. This means that they are natural reservoirs that absorb carbon and reduce its concentration in the atmosphere. Marine ecosystems that fulfill this function include coral reefs, seagrasses and mangroves. These ecosystems not only absorb carbon, but also provide ecosystem services and serve as a natural protective barrier for coastal communities.

Just to mention a few examples, reefs provide important ecosystem services (Moberg, 1999), even though they cover only 0.1 to 0.5 % of the seafloor, host about one third of the world's total marine fish species, and provide food, recreation, coastal protection and cultural benefits. Seagrasses provide protective services against coastal erosion, provide habitat and food for many species in early stages of maturity, oxygenate the water column, and are considered one of the ecosystems with the highest carbon dioxide sequestration, which contributes to climate change mitigation. Mangroves are coastal marine ecosystems inhabited by various species of shrubs, bushes, ferns and palms, whose main tree is the mangrove, are a link between marine and terrestrial life, which performs ecological functions, such as: desalinating water, mitigating coastal erosion, serving as a natural barrier against climatic phenomena and sea level rise, absorbing carbon dioxide; and serve as shelter and habitat for many species (invertebrates, fish, birds, reptiles, amphibians and mammals).

In response to this, the UNFCCC begins to establish a series of obligations for States with regard to the protection of coastal marine ecosystems. The obligations of the States that are most closely related to the oceans in the UNFCCC can be classified into: management, conservation and information reporting. Regarding the first, the UNFCCC establishes the obligation of States to promote the sustainable management of oceans and marine and coastal ecosystems as carbon sinks and reservoirs (Article 4); to formulate, implement and regularly update national mitigation and adaptation programs; and to develop and regularly update national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs. Regarding the second, the obligation to promote the conservation and strengthening of oceans and ecosystems is established. Regarding the obligation to report information, the States assume the obligation to regularly publish the national mitigation and adaptation programs, and to publish and provide the COP with the national inventories.

2.2. The Paris Agreement and the protection of the oceans

At the 2015 Conference of the Parties to the UNFCCC, the Paris Agreement was adopted to strengthen global action to address the threat of climate change in a context of sustainable development (United Nations, 2015). The goal of the Agreement is to limit global warming to well below 2, preferably 1.5 degrees Celsius, compared to pre-industrial levels. Although the Paris Agreement does not specifically mention the terms oceans and marine and coastal ecosystems at length, there are standards that do so in a cross-cutting manner, for example, by mentioning vulnerable ecosystems and resilience issues.

One of the recitals of the Agreement states that the parties note the importance of ensuring the integrity of all ecosystems, including the oceans, and the protection of biodiversity". One aspect that is striking is that the Agreement has a multicultural perspective, noting that the protection of biodiversity is recognized by some cultures as "Mother Earth". A second aspect to highlight is that the Agreement recognizes that for some actors the concept of "climate justice" is important when adopting measures to address climate change (see recitals of the Agreement).

With respect to the obligations that the Agreement establishes to protect vulnerable ecosystems, among which several marine and coastal ecosystems are understood to be included, the following are highlighted (Article 7):

- Increase adaptive capacity, strengthen resilience and reduce vulnerability to climate change.
- Protect people, livelihoods and ecosystems, taking into account the urgent and immediate needs of developing country Parties that are particularly vulnerable to the adverse effects of climate change.
- Responding to issues of gender, participation, transparency, and taking into consideration vulnerable groups, communities and ecosystems, and considering the best available scientific information.
- Acting in a cooperative and facilitative manner to improve understanding, action and support may include: early warning systems; emergency preparedness; slow-onset events; events that can produce permanent and irreversible loss and damage; comprehensive risk assessment and management; risk insurance services, climate risk pooling and other insurance solutions; non-economic losses; and resilience of communities, livelihoods and ecosystems.

All of these measures should consider the specific vulnerabilities of the communities that are most at risk, as well as countries, particularly small island states, and countries with coastal zones and at risk of flooding.

B. Human rights: a complementary framework for understanding environmental obligations under the UNCLOS

States have an obligation to protect human rights from environmental harm and an obligation to fulfill their international commitments. The adverse effects of climate change on the enjoyment of a wide range of human rights give rise to broad obligations on States to take immediate action to prevent such harms. To comply with their international human rights

obligations, States must apply a rights-based approach to all aspects of climate change and climate action. Applying a rights-based approach clarifies the obligations of States and companies; catalyzes ambitious action; highlights the plight of the poorest and most vulnerable; and empowers people to participate in the design and implementation of solutions (Boyd, 2019).

The framework principles on human rights and the environment clarify three categories of State obligations: procedural², substantive, and special to those in vulnerable situations. The framework principles can be operationalized in the context of climate change to respect, protect and fulfill human rights (Boyd, 2019).

With respect to substantive obligations, States must not violate the right to a safe climate through their own actions; they must protect that right from being violated by third parties, especially businesses; and they must establish, implement, and enforce laws, policies, and programs to comply with that right. States must also avoid discrimination and retrogressive measures (Boyd, 2019). These principles govern all climate actions, including obligations related to mitigation, adaptation, finance, and loss and damage; and these principles help interpret States' obligations under UNCLOS and customary law (Knox, 2017).

Human rights obligations are reinforced by international environmental law, as States are obliged to ensure that polluting activities within their jurisdiction or control do not cause serious harm to the environment or to the peoples of other States or to areas beyond the limits of national jurisdiction. Given the predictability of increasing climate impacts, this well-established "do no harm" rule of customary international law is being violated as a result of greenhouse gas emissions, which, regardless of where they are emitted, are cumulatively contributing to adverse effects on their States, including small island developing States. Different courts relied on international human rights law to hold the Dutch government accountable for compliance with commitments that the government itself claims are necessary

² In accordance with international human rights law, States have a procedural obligation to (a) Provide the public with accessible, affordable and understandable information on the causes and consequences of the global climate crisis, including the incorporation of climate change into educational curricula at all levels; (b) Ensure an inclusive, equitable, and gender-based approach to public participation in all climate-related actions, with particular emphasis on empowering the most affected populations, namely women, children, youth, indigenous peoples and local communities, people living in poverty, people with disabilities, older persons, migrants, displaced persons, and other potentially at-risk communities; (c) Facilitate affordable and timely access to justice and effective remedies for all, in order to hold States and corporations accountable for meeting their climate change obligations. (f) Respect the rights of indigenous peoples in all climate actions, in particular their right to free, prior and informed consent. (g) Provide robust protection for environmental and human rights defenders working on all climate-related issues, from land use to fossil fuels. States must vigilantly protect defenders from harassment, intimidation and violence (Boyd, 2019)(Knox, 2017).

to avoid dangerous climate change (Boyd, 2019).(Knox, 2017) Courts in three other European countries found that national governments had failed to take sufficient mitigation measures in light of their duty of care and human rights. .

Climate change threatens the very existence of some small island states. Global warming expands ocean waters and melts land ice, causing sea levels to rise. Long before islands are inundated, climate change may make them uninhabitable by increasing the frequency and severity of storm surges or by causing seawater to encroach on their freshwater resources. If residents of small island states are forced to evacuate and seek other homes, the effects on their human rights, including their rights to self-determination and development, will be devastating (Knox, 2017). These foreseeable impacts on small island states, coastal communities, and fishing communities mean that states must act diligently to avoid them because of their duty not to cause harm to other states and to protect the environment.

States have an obligation to act with due diligence to prevent activities contrary to the rights of other States, in application of which they must take appropriate measures to prevent activities that may cause transboundary environmental damage. Understanding the causes of climate change is a prerequisite for designing effective response strategies. Thus, the mitigation obligation implies that states must cooperate by monitoring emissions and sinks within their own territory and sharing information with each other. The climate treaties impose multiple detailed rules in this regard. The mitigation obligation implies that states must develop action plans with the objective of mitigating climate change. States must implement environmental assessment procedures as a tool to mitigate climate change. A state would not be exercising due diligence if it departed from its own plans, systematically and without reason, in a manner detrimental to climate change mitigation (Mayer, 2022), due diligence requires states to design measures that are necessary, meaningful and effective in combating climate change.

From this perspective, the emission of greenhouse gases generates and will generate impacts and damage to marine ecosystems. These damages and impacts are foreseeable and precise; this circumstance makes it necessary for States to act diligently so that, within their possibilities, they take the necessary measures to prevent and mitigate these damages. This is a legal obligation arising from the content of the UNCLOS interpreted in harmony with the principles of international law. Thus, States must:

- Include the protection and preservation of the marine environment, including the climate perspective, in their regulations, policies and environmental impact assessment.

- Act with due diligence to prevent or minimize harmful pollution from greenhouse gas emissions. Take all necessary measures to prevent, reduce and control greenhouse gas pollution of the marine environment.
- Minimize, to the extent possible, the emission of greenhouse gases from land-based sources into the marine environment.
- Prevent, reduce and control pollution of the marine environment caused by land-based and atmospheric emissions of greenhouse gases.
- Prevent, reduce and control greenhouse gas pollution of the marine environment.
- Protect and preserve the marine environment from the harmful effects of climate change.
- Promote marine scientific research, including ocean-climate interactions.
- Include regulation of GHG emissions from ships.

III. UNCLOS *corpus juris* to protect marine biodiversity and to ensure its sustainable use and equitable access

In order to contribute to the answer to the question of the request for an advisory opinion on the duties to protect and conserve the oceans, this part of the document provides an interpretation of the UNCLOS rules on the protection of marine ecosystems in the context of climate change. In addition, the normative frameworks on marine biodiversity protection complementary to the Interpretation of the UNCLOS *Corpus Juris* are presented, with a view to ensuring sustainable use and equitable access to marine biodiversity.

A. UNCLOS and the duty to protect marine ecosystems in the context of climate change

UNCLOS provides the legal framework for all activities in the oceans and seas, including the conservation and sustainable use of marine biodiversity beyond areas of national jurisdiction. UNCLOS obliges States to protect and preserve the marine environment (including rare or fragile ecosystems), with requirements for cooperation among Parties at global and regional levels to formulate and develop the necessary international standards (UNCLOS Articles 192, 194 and 197) (Addis, D., 2012). Part XII contains a number of general principles that oblige States to take measures to prevent, reduce and control damage to the marine environment. It focuses primarily on pollution, although not all of the general principles are limited to it. Part XII also establishes a framework that delimits which states have jurisdiction over ships that may pollute the marine environment and creates safeguards for ships accused of polluting. UNCLOS does not create specific rules for pollution, but rather elaborates the general principles and

obligations and recognizes that the specific rules will be implemented through other international instruments (Mossop, J., 2018).

However, beyond Part XII, the influence of environmental principles is much less. In relation to fisheries in the exclusive economic zone (EEZ), UNCLOS requires coastal States to promote optimum utilization in their EEZs, while ensuring that living resources are not threatened by overexploitation. These requirements are based in part on the economic rationale that fish stocks should be exploited, but not so much as to overexploit them (with the consequent potential impact on other stocks beyond the EEZ). Part VI does not impose specific environmental obligations on coastal states with respect to sedentary species on the continental shelf. On the high seas, freedom of fishing is subject to the obligation to cooperate with other States to adopt measures for the conservation of living resources, including the establishment of RFMOs. States must seek to maintain or restore fish stocks at levels that can produce the maximum sustainable yield, and there is a further instruction to take associated or dependent species into account when agreeing measures on the high seas (Mossop, J., 2018).

The above shows how UNCLOS has very concrete applications of environmental principles through specific rules in consideration of some elements of the marine environment. Although it could be said that this shows the sectoral and partial character of UNCLOS. It can also be understood in a second sense, and that is that these specific applications show the need to consider the principles that underpin the content of UNCLOS.

The need to protect the marine environment is found elsewhere in UNCLOS. The regime for the seabed beyond national jurisdiction directs the International Seabed Authority to adopt rules to prevent, reduce and control pollution from seabed activities and to protect and conserve the flora and fauna of the marine environment (Mossop, J., 2018). Coastal states can take measures in areas under their jurisdiction, including the territorial sea and EEZ, to protect the marine environment. Coastal states may also refuse permission for marine scientific research in the EEZ and on the continental shelf when the project may introduce harmful substances into the marine environment. This Part also explicitly states that all activities at sea must be carried out with due regard not to cause harm to other states and their environment. In addition, Art. 123 of UNCLOS states that States bordering an enclosed or semi-enclosed sea must coordinate the implementation of their rights and duties with respect to the protection and preservation of the marine environment (Mossop, J., 2018; Quintos, 2015).

We can therefore affirm that the duty to protect the marine environment and prevent environmental damage to it is a norm derived from the convention. Now, climate change poses

serious threats to the oceans; however, at the same time, the oceans, being the world's largest carbon sink, can play an important role in mitigating the impact of climate change on the environment.

A broad interpretation of the definition of marine pollution in Article 1(4) of UNCLOS, which focuses on the effects of the introduction of substances and energy into the marine environment directly or indirectly, could be put forward. This definition paves the way for the effects of global warming on the marine environment to fall within the scope of UNCLOS regulation. Consequently, state obligations to control, reduce and prevent marine pollution under Part XII may oblige states to take measures to address the effects of climate change (Nguyen, 2021).

In the same direction, recent developments in the jurisprudence of international courts and tribunals have revived the role of customary international law in imposing obligations on States in relation to the environment. These developments have been relatively modest, but have highlighted the possibility of strengthening environmental obligations in the law of the sea. One of the most prominent examples of this development was the Pulp Mills case, in which the International Court of Justice established important principles for the management of transboundary damage. Among the obligations identified by the Court in that case was the obligation of a State to exercise due diligence in the performance of its environmental duties, including the obligation to conduct an environmental impact assessment if there is a risk that an activity under the State's control may have a significant adverse impact in a transboundary context. The Tribunal stated that the latter was a principle of customary international law. Although this was not a marine environmental protection case, it is a remarkable indication by the Tribunal that it is willing to derive important environmental obligations for States from customary international law (Mossop, J., 2018).

The International Tribunal for the Law of the Sea (ITLOS) referred to these principles in its Advisory Opinion on activities in the Area. The Tribunal's Seabed Disputes Chamber was asked to elaborate on the obligations of States sponsoring entities conducting activities in the seabed (the Area). The Tribunal noted that the United Nations Convention on the Law of the Sea and the relevant regulations issued by the International Seabed Authority contained important obligations. However, it also recognized that customary international law created obligations for States. With respect to the precautionary approach, the Tribunal suggested that the inclusion of the approach, reflected in Principle 15 of the Rio Declaration, in treaties and other instruments "started a trend towards making this approach part of customary international law". The Tribunal also suggested that a State required to exercise due diligence to comply with

environmental treaty obligations could, as a consequence, be required to follow the precautionary approach. This was a significant step by an international tribunal to integrate the precautionary approach into the corpus of the law of the sea in a way that goes beyond the precise wording of specific treaties. Thus, it is possible to interpret the UNCLOS Article 192 obligation to protect and preserve the marine environment by considering the application of the precautionary approach as part of the State's obligation to exercise due diligence to implement Article 192 (Mossop, J., 2018.).

The Tribunal was also keen to point out that the obligation of States to conduct environmental impact assessments derives from both customary international law and treaty law. It referred to the Pulp Mills decision, and stated that the ICJ's

... reasoning in a transboundary context may also apply to activities with an impact on the environment in an area beyond the limits of national jurisdiction; and the Tribunal's references to "shared resources" may also apply to resources that are the common heritage of mankind ...

The ITLOS issued a second advisory opinion at the request of the Sub-Regional Fisheries Commission in 2015. While focusing on state responsibility for IUU fishing, the Tribunal briefly addressed the relationship between Article 192 and the responsibility of flag states to ensure that their vessels comply with coastal state measures. The Court noted that the conservation and management of living resources is linked to the protection and preservation of the marine environment (Mossop, J., 2018).

The most significant recent decision on the protection of the marine environment is the arbitral award in the South China Sea Arbitration. The Tribunal ruled that China had failed to prevent its fishermen from catching endangered marine species and that its construction of artificial islands had had a significant negative impact on the marine environment. The Tribunal interpreted the obligation of Article 192 in light of the instruction in Article 194(5) to take necessary measures to protect and preserve rare or fragile ecosystems. It also considered that Article 192 must be "read in the context of other applicable international law"³. The Tribunal referred to China's acceptance of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and stated that Article 192 imposes a due diligence obligation

³ What is notable about the *South China Sea arbitration* is the clear connection between the lack of measures to protect vulnerable marine species from exploitation and the obligation to protect the environment. It is also interesting that China's membership of CITES seems to have been taken into account when applying Article 192, and also that the Convention on Biological Diversity was used to interpret the meaning of "ecosystem" in Article 194 (Mossop, J., 2018).

that "extends to the prevention of damage that would affect depleted, threatened or endangered species indirectly through the destruction of their habitat." In relation to the construction of artificial islands, the Tribunal concluded that China was in breach of its obligations under arts. 192 and 194. The Tribunal also found that China had an obligation to conduct an environmental impact assessment, based on Article 206 of UNCLOS (Mossop, J., 2018).

Thus, given the foreseeable and potentially catastrophic adverse effects of climate change on the marine environment, it is possible to consider that the emission of greenhouse gases is a form of pollution that can affect the marine environment, and in this sense States have the obligation to prevent and mitigate the effects of climate change under the convention and customary law.

Small islands are increasingly affected by rising temperatures, according to the report *Climate Change 2022: Impacts, Adaptation and Vulnerability*, presented by the IPCC. These effects include a greater proportion of more intense tropical cyclones (TCs), storm surges, droughts, changes in precipitation patterns, sea level rise (SLR), coral bleaching, and invasive species, all of which are already detectable in natural and human systems (IPCC, 2022).

Projected changes in wave climate superimposed on SLR will rapidly increase flooding in small islands, despite highly contrasting exposure profiles between ocean subregions. Projected SLR estimates for 2050, compared to 1994-2014, range from 18 to 24 cm and, in a worst-case scenario, could be 15 to 40 cm, which will double the frequency of flooding over much of the Indian Ocean and Tropical Pacific, while TCs will remain the main driver of (rarer) flooding in the Caribbean Sea and Tropical South Pacific (IPCC, 2022).

The continued degradation of small island terrestrial and marine ecosystems due to the negative impact of human activity will increase the vulnerability of island peoples to the effects of climate change. New studies highlight large population declines with a 100% extinction risk for endemic species within island biodiversity hotspots, including within the Caribbean, Pacific and Sundaland regions by 2100 for $> 3^{\circ}\text{C}$ warming. Ecosystem degradation is likely to reduce the supply of resources to the millions of people living on small islands, impacting settlements and infrastructure, food and water security, health, economy, culture, and migration (IPCC, 2022).

Coastal cities and rural communities on small islands have already been affected by sea level rise, heavy rainfall, tropical cyclones and storm surges. Climate change is also affecting settlements and infrastructure, health and welfare, water and food security, and economies and

culture, especially through compound (high confidence) events. These changes are of great concern to small islands, given that a high percentage of their population, infrastructure and economic assets are located in the low elevation coastal zone, below 10 meters in elevation. The problems of increased exposure and vulnerability are most clearly seen in the atoll islands (IPCC, 2022).

Projected changes in aridity are expected to impose freshwater stress on many small islands, especially in Small Island Developing States (SIDS). It is estimated that with a warming of 1.5 °C or less, freshwater stress on small islands would be 25% lower compared to 2.0 °C. Drought risk projections for Caribbean SIDS, aligned with observations from the Shared Socioeconomic Pathway (SSP) 2 scenario, indicate that a 1°C increase in temperature (from 1.7°C to 2.7°C) could result in a 60% increase in the number of people projected to experience severe water stress between 2043 and 2071 (IPCC, 2022).

In small islands, coastal land loss attributable to sea level rise, increased precipitation extremes and wave impacts, and increased aridity have contributed to food and water insecurity, which is likely to worsen in many locations (*high confidence level*). Most Pacific Island countries could experience declines of $\geq 50\%$ in maximum potential fish catch by 2100 relative to 1980-2000 under both RCP 2.6 and RCP 8.5 scenarios (IPCC, 2022).

The above examples show how there are concrete and precise damages to marine ecosystems and States, especially coastal and small islands, as a consequence of climate change. Although there may be dilemmas in attributing responsibility for the necessary causation, what is clear is that States must contribute to reducing the impacts and risks arising from climate change by controlling greenhouse gas emissions. This is an obligation that follows from the principle of non-detriment and the duty to protect the marine environment.

B. Complementary regulatory frameworks on marine biodiversity protection for the interpretation of the UNCLOS *corpus juris*

The protection of oceans and marine ecosystems is a concern that has been incorporated into international law. Thus, the protection of marine ecosystems and biodiversity has been developed in multiple instruments. In particular, there are two types of international instruments: those whose direct object is the protection of marine biodiversity and those with general protection standards. The former will be referred to as specific treaties on marine biodiversity and the latter as general treaties with rules on marine biodiversity.

In the first group, we find the framework of the International Maritime Organization (IMO), first of all, the regulatory framework of MARPOL, officially called the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (International Maritime Organization). It is a treaty inspired by pollution prevention, the precise purpose of which is: "to prevent pollution of the marine environment by the discharge of harmful substances, or effluents containing such substances. The MARPOL framework establishes a series of obligations aimed at preserving the marine environment through prevention, which is specified through rules and identification of specific activities directly or indirectly associated with ships. These include the "Rules for the Prevention of Air Pollution from Ships," which contain rules on the issuance of the International Air Pollution Prevention Certificate, provisions for the control of emissions from ships (e.g., limits on emissions of sulfur oxides and nitrogen oxides, and the prohibition of deliberate emissions of ozone-depleting substances), and mandatory technical and operational energy efficiency measures to reduce greenhouse gas emissions from ships.

Some conventions address the duty to protect the marine environment from specific threats. For example, the International Convention on Civil Liability for Oil Pollution Damage (CLC 1969 Convention). A protocol to this convention was adopted in 1976 (International Maritime Organization. n.d.-a) and another protocol was adopted in 1992 (International Maritime Organization. n.d.-b). In addition, other international treaties address issues related to this type of pollution, ranging from intervention in the event that it occurs to the creation of a fund to deal with the issue. Thus, the International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties of 1969, establishes that States on the high seas may take measures to prevent, mitigate or eliminate any grave and imminent danger to their coastline or related interests, due to pollution or threat of pollution of the waters of the sea by oil, when such events occur (International Maritime Organization. n.d.-c).

This group of international instruments also establishes the creation of an international fund for compensation for oil pollution damage. In this respect, the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (1971 FUND Convention) (International Maritime Organization. n.d.-d) and three additional protocols have been signed.

Another group of treaties addresses pollution by substances other than hydrocarbons. Although they do not have the same number of international instruments, they at least address key issues in the protection of marine biodiversity. These include conventions and protocols relating to the transport of nuclear material, dumping of wastes and other materials, pollution from hazardous

and noxious substances, and management of ballast water and sediments from ships. The general obligations within the framework of these conventions can be grouped as follows (International Maritime Organization): individual or collective promotion of the control of all sources of pollution of the marine environment; adoption of possible measures to prevent pollution of the sea by dumping of wastes and other materials; adoption of measures according to scientific, technical and economic capacity, and collectively, to prevent pollution of the sea caused by dumping; among others.

As can be seen in this section, international law has been concerned with establishing measures to protect marine ecosystems from pollution and to establish a broad set of obligations of States to prevent damage to these ecosystems. These obligations can be important inputs for interpreting the rules for the protection of marine ecosystems contained in UNCLOS, as they show how the protection of marine ecosystems is mediated by the fulfillment of a set of procedural and substantive obligations of the State, which incorporate elements such as prevention (avoiding damage), planning, cooperation or repair of damage caused by different types of pollution, which can reasonably include that derived from or connected to the effects of climate change.

The Convention on Biological Diversity, adopted in 1992, has three objectives: 1) The conservation of biodiversity, 2) The sustainable use of biodiversity, and 3) The fair and equitable sharing of the benefits derived from the use of biodiversity. In addition, within the framework of this agreement, a strategic plan has been developed with the following strategic objectives: (a) Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society; (b) Reduce direct pressures on biodiversity and promote sustainable use; (c) Improve the status of biodiversity by safeguarding ecosystems, species, and genetic diversity; (d) Enhance the benefits of biodiversity and ecosystem services for all; (e) Improve implementation through participatory planning, knowledge management, and capacity building; (f) Enhance the use of biodiversity and ecosystem services for all; (g) Improve the conservation and sustainable use of biodiversity; and (h) Enhance biodiversity conservation and sustainable use of biodiversity.

Article 22 establishes the relationship of the Convention on Biological Diversity with other international conventions, stating that the rules contained in the Convention apply with respect to the marine environment, in accordance with the law of the sea (United Nations, 1992). In other words, the rules on conservation and use of biodiversity contained in the Convention are applicable to the marine environment, and therefore include marine biodiversity.

The negotiation process of the International Treaty for the conservation and sustainable use of Biodiversity Beyond National Jurisdiction) (BBNJ) that began in 2017 with the call made by the United Nations General Assembly, through Resolution 72/2459, to the States to negotiate this agreement was recently advanced. The resolution states that the Assembly

decides to convene an intergovernmental conference, under the auspices of the United Nations, to consider the recommendations of the Preparatory Committee on the elements and to elaborate the text of an international legally binding instrument under the United Nations Convention on the Law of the Sea² on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, with a view to developing the instrument as soon as possible (General Assembly of the United Nations, 2018).

The text of the convention contains a number of provisions relating to the protection of marine biodiversity. In particular the object is

to ensure the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, for the present and in the long term, through effective implementation of the relevant provisions of the Convention and further international cooperation and coordination (General Assembly of the United Nations, 2023).

This is congruent with what has been explained so far in the sense of indicating a clear trend in the development of international law towards the establishment of rules for the protection of marine ecosystems around a common core articulated around the ideas of the need for protection and conservation of the oceans and marine ecosystems, the duties of prevention, cooperation, planning and due diligence of the States to ensure conditions that ensure environmental sustainability.

At the regional level, specific regulations have also been developed for the protection of marine ecosystems. The Convention for the Conservation and Development of the Marine Environment of the Wider Caribbean Region, also known as the "Cartagena Convention", was adopted in Cartagena de Indias, Colombia on March 24, 1983 and entered into force on October 11, 1986 (United Nations, 1983). This international instrument is binding for the Caribbean region and for countries adjacent to the Atlantic Ocean. The Cartagena Convention was created with the objective that the countries of the Wider Caribbean region achieve a balance between development and protection of the marine environment. As a result of this Convention, the

following instruments have been signed: the Protocol on Cooperation to Combat Oil Spills in the Wider Caribbean Region, the Protocol Concerning Specially Protected Areas and Wildlife, and the Protocol on the Prevention and Control of Marine Pollution from Land-Based Sources and Activities.

In general terms, the Contracting Parties must adopt, individually or jointly, measures to prevent and control pollution and guarantee the rational management of the environment, as well as cooperate in the elaboration of protocols and agreements that promote the application of the Convention. With the objective of preventing and controlling pollution of the Wider Caribbean Region area in a comprehensive manner, the Convention establishes that the Contracting Parties must adopt appropriate measures for the achievement of this purpose, especially in relation to pollution caused by discharges from ships (Article 5), by discharges of wastes and other matter from ships, aircraft, or artificial structures at sea (Article 6), by wastes and discharges from land-based sources (Article 7), by the exploitation and exploration of the seabed and subsoil (Article 8), and by discharges into the atmosphere from activities carried out in their territory (Article 9).

The Contracting Parties must establish criteria for the planning of large development projects and evaluate the possible environmental impact that these may have on the area protected by the Convention (Article 12). The Convention establishes that the Contracting Parties must cooperate in the development of scientific research and monitoring programs, and provide technical assistance (Article 13), as well as develop emergency plans and take the necessary measures to deal with pollution incidents occurring in the Wider Caribbean Region (Article 11). It could be pointed out that the main objective of the Cartagena Convention and its protocols is to adopt all appropriate measures to prevent, reduce and control pollution caused by ships, dumping, land-based sources, seabed activities, pollution transmitted through the atmosphere, as well as to ensure the protection of marine ecosystems.

From this perspective, we can conclude at least the following things: (a) the concern for the protection of marine ecosystems and oceans has been incorporated in international law since the subscription of specific conventions and since the establishment of general rules, (b) around this concern a common core of substantive and procedural obligations has been built on the head of States to prevent the degradation of marine ecosystems; c) UNCLOS incorporates rules for the protection of marine ecosystems that must be read in harmony with the developments of international law and especially those referring to the duties of protection of marine biodiversity, to ensure its sustainable use and equitable access to it.

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