The Role of International Law in Protecting the Marine Environment against Climate Change

دورالقانوني الدولي في حماية البيئة البحرية من التغيرات المناخية

Preparation

Dr. Ahmed Mohamed Radwan Hassan Hikal

Lecturer of Public International Law
Department of Law & Basic Sciences,
Higher Institute of Management

Email:

mr.ahmedradwan1990@gmail.com

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أحمد محمد رضوان حسن هيكل

قسم الحقوق والعلوم الأساسية، المعهد العالي للإدارة، المحلة الكبرى، مصر.

البريد الإلكتروني: mr.ahmedradwan1990@gmail.com

ملخص البحث:

تُعتبر البيئة البحرية من أبرز الأصول الطبيعية التي تسهم في استدامة كوكب الأرض، حيث تلعب دورًا حيويًا في تنظيم المناخ العالمي. ومع تزايد التهديدات الناجمة عن تغير المناخ، أصبح من الضروري تعزيز الحماية الدولية للبيئة البحرية من التغيرات المناخية. تشير النتائج إلى أن تغير المناخ له تأثيرات سلبية متزايدة على البيئة البحرية. كما انه يهدد التنوع البيولوجي واستدامة الموارد البحرية، وتكشف الدراسة عن عدم كفاية الأطر القانونية الدولية الحالية لمواجهة التحديات الناشئة عن تغير المناخ، وأن هناك حاجة ملحة لتطوير آليات المساءلة الدولية للدول المسؤولة عن انبعاثات غازات الاحتباس الحراري، مما يستدعي التزامات إضافية من الدول المتقدمة. تسلط الدراسة الضوء على أهمية المبادئ القانونية مثل مبدأ الحذر ومبدأ "عدم الإضرار" في تعزيز حماية البيئة البحرية. كما تؤكد على ضرورة اتخاذ تدابير تكيفية، مثل إنشاء مناطق محمية بحرية، لتعزيز مرونة النظم البيئية البحرية، وتؤكد على أهمية العدالة بين الأجيال، حيث يجب أن يتحمل الجيل الحالي مسؤولية الحفاظ على البيئة البحرية للأجيال القادمة، ويجب أن تُعزز تقييمات الأثر البيئي كشرط في القانون الدولي لضمان حماية شاملة للبيئة. أخيرًا، تعكس النتائج أهمية الوعي البيئي وزيادة الاعتراف بالمسؤولية البيئية لتعزيز التعاون الدولي في مواجهة تلوث البيئة وتدهورها.

الكلمات المفتاحية: التغيرات المناخية، البيئة البحرية، المسؤولية الدولية عن التغيرات المناخية.

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Ahmed Mohamed Radwan Hassan Hikal
Department of Law & Basic Sciences, Higher Institute of Management, El-Mahalla El-Kubra, Egypt.
Mail: mr.ahmedradwan1990@gmail.com

Abstract:

The marine environment is considered one of the most significant natural assets contributing to the sustainability of the Earth, playing a vital role in regulating the global climate. As threats arising from climate change increase, it has become essential to enhance international protection for the marine environment against these changes. The results indicate that climate change has increasingly negative impacts on the marine environment, threatening biodiversity and the sustainability of marine resources. The study reveals the inadequacy of current international legal frameworks in addressing the challenges arising from climate change and underscores the urgent need to develop international accountability mechanisms for countries responsible for greenhouse gas emissions, which necessitates additional commitments from developed countries. Furthermore, the study highlights the importance of legal principles such as the Precautionary Principle and the No-Harm Principle in enhancing the protection of the marine environment. It emphasizes the need for adaptive measures, such as the establishment of marine protected areas, to bolster the resilience of marine ecosystems. Additionally, it stresses the significance of intergenerational justice, asserting that the current generation must bear the responsibility for preserving the marine environment for future generations. Moreover, Environmental Impact Assessment must be strengthened as a requirement under international law to ensure comprehensive protection of the environment. Finally, the results reflect the importance of environmental awareness and the increased recognition of environmental responsibility to enhance international cooperation in confronting environmental pollution and degradation.

Keywords: Climate Change, Marine Environment, International Responsibility for Climate Change.

Introduction and Significant

The issue of climate change has recently garnered significant attention at both global and local levels due to the substantial risks it poses to human life and the surrounding environment in general and in particularly the marine ecosystem. The marine environment is regarded as one of the most valuable natural resources contributing to the sustainability of our planet, as it plays a crucial role in regulating the global climate and providing essential food resources.

In fact, the survival of the world's poorest people depends on their close relationship with the sea. The economic importance of the sea is evidenced in the ecosystem services provided by way of fisheries, tourism, coastal protection, and in its role as a source of raw materials,(1) and give us food and water, and are home to hundreds of thousands of species(2). Oceans consider the most productive habitat, comprising ٧٥ per cent of all known species(3). More than ٩٣ per cent of all the heat people have added to the planet since the ١٩٥٠s has been absorbed by the oceans(4).

The climate system is an important element of the ecosystem of any society. Focusing the research on the role of international law in protecting the marine environment from climate change requires defining the climate system. The United Nations Framework Convention on Climate Change stipulated in Article ١, (para.٣) that the Climate system "means the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions".(5) This is a complex and highly interconnected system involving the atmosphere, ocean, land surface, snow and ice, small bodies of water, and living

(1) Marcia Creary, (April 2013), Impacts of Climate Change on Coral Reefs and the Marine Environment, No. 1 Vol. L, Water
https://www.un.org/en/chronicle/article/impacts-climate-change-coral-reefs-and-marine-environment

(2) Isabella Lövin, (May 2017), Climate Change Poses a Threat to Our Oceans, Nos. 1 & 2 Volume LIV, Our Ocean, Our World
https://www.un.org/en/chronicle/article/climate-change-poses-threat-our-oceans

(3) Marcia Creary, Op. Cit.

(4) Isabella Lövin, Op. Cit.

(5) See: Article 1 (para.3) of the United Nations Framework Convention on Climate Change (UNFCCC, 1992).

organisms. The Earth's climate system varies across time scales, and is driven by natural processes, including the Earth's orbital changes, solar variations, volcanic eruptions, earthquakes, and global ocean currents. Yet, it is regulated by the atmosphere's natural abundance of nature-produced greenhouse gases like water vapor, carbon dioxide ($CO_٢$), methane, and nitrous oxide. These natural gases play a fundamental role in maintaining and regulating the Earth's climate system(1). As the main component of the Earth's climate system is the ocean,(2) that occupy nearly ٧١٪ of our planet's surface, (3) and contains about ٩٧٪ of the Earth's water,(4) about ١,٣٥ billion cubic kilometers (٣٢٤ million cubic miles) of water(5). Historically, the sea has served as a major transportation network, a source of food and a favourite recreational area. Most major cities were developed along the coast as trading areas depend on the sea for their livelihood(6). There is an economic perspective, which confirms that in ٢٠١٠, the ocean economy generated over ٣٠ million direct, full-time jobs and before the COVID-١٩ pandemic, the economic output had been predicted to reach ٣ trillion US dollars by ٢٠٣٠.(7) More than ٣,٥ billion people depend on the ocean for their primary source of food. Within ٢٠ years, this number could double to ٧ billion(8).

The ocean plays a fundamental role in regulating global

(1) R.M. Venegas, J. Acevedo, E.A. Treml, (August 2023), Three decades of ocean warming impacts on marine ecosystems: A review and perspective, Deep-Sea Research Part II, p. 4. https://doi.org/10.1016/j.dsr2.2023.105318

(2) Ibid, p. 5.

(3) https://www.savethesea.org/STS%20ocean_facts.htm

(4) Poloczanska, E., et al. (2019), The Ocean and Cryosphere in a Changing Climate: A Special Report of the intergovernmental panel in climate changing, (IPCC), p.5. https://www.ipcc.ch/site/assets/uploads/sites/3/2019/12/SROCC_FullReport_FINAL.pdf

(5) R.M. Venegas, J. Acevedo, E.A. Treml, Op. Cit., p. 5.

(6) Marcia Creary, Op. Cit.

(7) Intergovernmental Oceanographic Commission, (2021), The United Nations Decade of Ocean Science for Sustainable Development (2021-2030): Implementation Plan, summary, United Nations Educational, Scientific and Cultural Organization, France UNESCO, p.6. https://unesdoc.unesco.org/ark:/48223/pf0000376780

(8) https://www.savethesea.org/STS%20ocean_facts.htm , Op. Cit.

temperatures. Not only does the ocean absorb ٩٣ percent of the heat trapped by rising anthropogenic carbon dioxide (CO_2), but it also absorbs approximately ٢٥ to ٣٠ percent of anthropogenic CO_2 emissions that would otherwise remain in the atmosphere and increase global warming, The ocean also produces around ٥٠ percent of the oxygen on the planet through the photosynthetic activity of marine plants and algae. The ocean's ability to contribute to these fundamentally important services, however, is at risk, Ocean warming and acidification (the latter being a direct result of the extra CO_2 dissolving into the ocean) are damaging marine ecosystems and compromising the ability of the ocean to provide food, livelihoods, and safe coastal living on which billions of people depend(1).

Over the past few decades, land use in overgrazing, tree clearing and climate change(2) have resulted a negative impacts on biodiversity and ecosystem functions and is often associated with ecosystem degradation(3). The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, ٢٠٠٧) presented strong evidence that global warming over the last century was largely a result of human activity, such as the burning of fossil fuel, deforestation(4). Humans influence climate primarily through fossil-fuel, industrial emissions that alter atmospheric composition. Long-lived, heat-trapping greenhouse gases (CO_2, CH_4, N_2O, tropospheric

(1) Hoegh-Guldberg. O., et al., (September 2019), "The Ocean as a Solution to Climate Change: Five Opportunities for Action", Report by the High-Level Panel for a Sustainable Ocean Economy, World Resources institute, Washington,p.5.
https://www.researchgate.net/publication/335984900_The_Ocean_as_a_Solution_to_Climate_Change_Five_Opportunities_for_Action

(2) See: Article 1 (para.3) of UNFCCC, Op. Cit., (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".

(3) Jingyi Ding, Samantha K. Travers, Manuel Delgado-Baquerizo, David J. Eldridge, (February 2020), Multiple trade-offs regulate the effects of woody plant removal on biodiversity and ecosystem functions in global rangelands, Global Change Biology, Volume 26, Issue 2, p. 710.
https://doi.org/10.1111/gcb.14839

(4) Marcia Creary, Op. Cit.

ozone, and chlorofluorocarbons) warm the planet's surface globally(1).

Temperature records from as far back as ١٨٥٠ show that the globe has on average warmed by ٠,٨° C, and further analysis has shown that since the ١٩٧٠s each decade has been warmer. Global concentrations of carbon dioxide ($CO_٢$) have also shown increased levels from an average of ٢٨٠ parts per million (ppm) in the mid-nineteenth century, at the beginning of the industrial revolution, to approximately ٣٨٨ ppm at the beginning of the twenty-first century. The global warming trend is expected to continue, as IPCC estimates that the global average temperature will be ٢,٥-٤,٧° C higher in ٢١٠٠ when compared to pre-industrial levels(2).

From this perspective, the **significance** of the current study focusing on the marine environment is multifaceted. It encompasses environmental dimensions, as the marine environment plays a crucial role in regulating climate and mitigating the impacts of climate change. Additionally, it includes economic dimensions, given that marine resources create job opportunities in sectors such as fisheries and marine tourism. Furthermore, it addresses social dimensions, as communities residing in coastal areas rely directly on marine resources for their livelihoods. The degradation of the marine environment poses a threat to these livelihoods and may exacerbate social instability. Recently, the marine environment has faced severe risks due to climate change, highlighting the urgent need to strengthen international legal frameworks for its protection.

The issue of climate change is become one of the main concerns of both domestic and international law. In the context of responsibility for climate change, the focus is on the obligations of highly developed countries towards developing countries, which not infrequently bear a disproportionate share of the damages and risks associated with climate change relative to their contribution to the greenhouse effect(3).

Climate change is an inherently intergenerational problem with extremely serious implications for equity between our-selves and

(1) Scott C. Doney, et al., (January 2012), Climate Change Impacts on Marine Ecosystems. Annual Review of Marine Science, Vol.4, p.14. https://doi.org/10.1146/annurev-marine-041911-111611

(2) Marcia Creary, Op. Cit.

(3) Maciej Nyka, (June 2021), State Responsibility for Climate Change Damages, Review of European and Comparative Law, Volume XLV Issue (2), P.132.

future generations and among communities in the present and the future. No longer can we ignore the fact that climate change is an intergenerational problem and that the well-being of future generations depends upon actions that we take today(1).

Since the marine environment plays an effective role in the issue of climate change and the risks it is exposed to because of it. From this standpoint, this research aims to examine the effectiveness of international law in protecting marine ecosystems from the impacts of climate change and its transboundary damages. The study will highlight the importance of the marine environment and the transboundary damages caused by climate change, while focusing on the international legal framework for protecting the marine environment in light of climate change. Key instruments in this framework include the Stockholm Declaration (١٩٧٢), the United Nations Convention on the Law of the Sea (UNCLOS, ١٩٨٢), the United Nations Convention on Biological Diversity (UNCBD, ١٩٩٢), the United Nations Framework Convention on Climate Change (UNFCCC, ١٩٩٢), the Kyoto Protocol (١٩٩٧), and the Paris Agreement (٢٠١٥). This research will evaluate the adequacy of these instruments in protecting the marine environment from pollution and the associated damages linked to climate change. It also addresses the international legal principles that contribute to attributing the international responsibility for this damage, which in turn fills the gap in some international instruments. Finally, the study will examine the types of international responsibility to confront the damages caused by climate changes, particularly those that could impact coastal states, such as those located along the Mediterranean Sea.

(1) Brown Weiss, (2008), Climate Change, Intergenerational Equity, and International Law, Vermont Journal of Environmental Law , Volume 9, pp.615, 616
https://scholarship.law.georgetown.edu/cgi/viewcontent.cgi?article=2637&context=facpub

The Problem of the Study

The climate changes that the world has faced at various levels have presented countries with two primary options for addressing the negative impacts of climate change: the first is to reduce greenhouse gas emissions resulting from human activities, and the second is to adapt to these changes. However, the greater the efforts made by countries to reduce emissions, the less they will need to adapt. Nonetheless, some of the negative impacts of these climate changes remain unavoidable, which raises the issue of international liability for damage to the marine environment.

The main problem of the current research lies in its attempt to identify effective means of protecting the marine environment in light of climate change, particularly in light of the disparities in responsibilities and obligations among countries. This problem also involves a re-evaluation of the concept of international responsibility. How can countries be held accountable for transboundary environmental damage inflicted upon other nations as a result of their activities? Additionally, how can international cooperation are enhanced to formulate clear legal rules that define responsibilities and ensure accountability? Moreover, it is essential to assess the adequacy of current legal instruments in addressing environmental challenges.

From this perspective, the current research will focus on the topic of "The Role of International Law in Protecting the Marine Environment against Climate Change" concentrating on three key Sections: first, the international legal framework for protecting the marine environment in force of climate change; second, the legal principles governing international responsibility for climate change; and third, state's responsibility and international liability regarding transboundary environmental damages of climate change to marine environment.

i. <u>Research Objectives</u>

١. **Analyze the International Legal Framework**: To evaluate the existing international legal instruments governing that govern the protection of the marine environment in the context of climate change, identifying their strengths and weaknesses.

٢. **Examine International Principles**: To investigate the legal principles that govern international responsibility for climate change.

٣. **Assess International Responsibility and Accountability**: To analyze responsibility for internationally wrongful acts and responsibility for hazardous activities to ensure accountability for individuals subject to international law.

ii. Research Questions

١. What are the key international legal instruments currently in force for protecting the marine environment against climate change?
٢. What are the obligations of developed countries towards developing countries, which often bear a disproportionate share of the damages and risks associated with climate change compared to their contribution to the greenhouse effect?
٣. How can the effectiveness of international responsibility for damages resulting from climate change be improved?

iii. Research Methodology

The research employs a descriptive-analytical methodology, reviewing relevant legal literature and international reports, and analyzing applicable legal texts. Case study will also be utilized to highlight practical experience in the application of these legal standards.

Section One:
International Legal Framework for Protecting the Marine Environment in force of Climate Change

Introduction

The marine environment is one of the most important assets contributing to the sustainability of the Earth and plays a vital role in regulating the global climate. However, it faces significant threats from climate change, which required an international framework to protect it. Therefore, this section will discuss the international legal framework for its Protection in scope of climate change, represented by: the Stockholm Declaration (١٩٧٢), which raised awareness of climate issues; the United Nations Convention on the Law of the Sea (١٩٨٢), which laid the legal groundwork for marine resource management; the Convention on Biological Diversity (١٩٩٢), aimed at preserving marine biodiversity; the United Nations Framework Convention on Climate Change (١٩٩٢) as a platform for tackling climate challenges; the Kyoto Protocol (١٩٩٧), which focuses on reducing greenhouse gas emissions; and the Paris Agreement (٢٠١٥), which signifies the global commitment to combat climate change.

١- Stockholm Declaration ١٩٧٢

The creation of World Metrological Organization was followed by the most important initiative of United Nations i.e., Stockholm Declaration of ١٩٧٢. This was the first global conference on environmental protection, organized by United Nations under the title of the UN Conference on Human Environment at Stockholm in Sweden in ١٩٧٢[1].

The conference emphasized the need for a common outlook and for common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment. This declaration includes ٢٦ main principles for protecting the human environment,[2] and urged every nation to create regulations regarding

(1) T. Samraj, (February 2024), "International Initiatives on Climate Change: Contributions of United Nations Organizations on Protecting the Nature." Shanlax International Journal of Arts, Science and Humanities, Volume:11, Special Issue: 2, p.8.

(2) Stockholm Declaration on the Human Environment (Adopted by the

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the protection of wild life and to preserve their environment. It recognized climate change as a global issue that should be addressed urgently. The major principles of this declaration included: the right to protect environment, use of science and technology, evolution of policies by the nations to protect the environment, management of natural resources, management of renewable resources, pollution control, and prevention of pollution in oceans and protection of wild life(1).

The Stockholm Conference emphasized how human actions can irreversibly harm the environment and staked out a course: the human environment needs to be protected and enhanced through common efforts at the local, national, and international levels(2).

The Declaration refers to the protection of the marine environment as a part of Earth's natural resources is an important matter for the benefit of present and future generations. Which was confirmed by Principle ٢ of the Stockholm Declaration, which states that "The natural resources of the earth, including the air, water,… must be safeguarded for the benefit of present and future generations..."; It also emphasizes the necessary of the discharge of toxic substances and excess heat, as well as preventing sea pollution, to protect marine ecosystems and living resources from the impacts of climate change, as it stated in Principle ٦ "The discharge of toxic substances or other substances and the release of heat, in such quantities or concentrations as to exceed the capacity of the environment to render them harmless, must be halted in order to ensure that serious or irreversible damage is not inflicted upon ecosystems…".Additionally Principle ٧ states "States shall take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm Living resources and marine life, to damage amenities or to interfere

United Nations Conference on the Human Environment, Stockholm, 16 June 1972; see U.N. General Assembly Resolutions 2994/XXVII, 2995/UVII and 2996/XXII of 15 December 1972
https://wedocs.unep.org/xmlui/bitstream/handle/20.500.11822/29567/ELGP1StockD.pdf?sequence=1&isAllowed=y

(1) Dr. T. Samraj, Op. Cit., p.8.

(2) Anita M. Halvorssen, (January 2011), International Law and Sustainable Development - Tools for Addressing Climate Change, Denver Journal of International Law & Policy, Volume 39 , Number 3 Summer,p.400.

with other legitimate uses of the sea"[1].

The most important aspect of the Declaration is that it confirms that states not only have the sovereign right to exploit their own resources but also responsible to ensure that their activities do not cause environmental damage to other states or areas beyond their jurisdiction, and encouraged cooperation between states to develop rules of international liability for environmental damage caused by activities within their jurisdiction[2].

Although; The Stockholm Declaration, unlike a convention, is a non-binding "soft law" [3]. But it served as a starting point for raising awareness of the issue of climate change.

٢- The United Nations Convention on the Law of the Sea ١٩٨٢ (UNCLOS).

"United Nations Convention on the Law of the Sea" (UNCLOS) is an important pillar of global maritime governance, which offers a thorough framework for state obligations in oceans and seas[4].

The Convention was adopted by the Third United Nations Conference on the Law of the Sea and opened for signature, together with the Final Act of the Conference, at Montego Bay, Jamaica, on ١٠ December ١٩٨٢, and entered into force in ١٦ November ١٩٩٤, in accordance with article ٣٠٨ (Para.١). It currently includes ١٦٩ States Parties[5].

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(1) See: Principles (2,6,7) of Stockholm Declaration on the Human Environment, Op. Cit.

(2) "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibi1ity 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."& "States shall co-operate to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such States to areas beyond their jurisdiction" ; Ibid, Principle 21 & 22.

(3) Anita M. Halvorssen, Op. Cit., p.400.

(4) Shivam Kumar Pandey, Marapaka Pavithra, (August 2023), United Nations Convention on the Law of the Sea at 40: Need to Revisit, Journal of Research & Development, Volume-15 Issue-16, P.4.

(5) https://treaties.un.org/Pages/ViewDetailsIII.aspx?src=TREATY&mtdsg_no=XXI-6&chapter=21&Temp=mtdsg3&clang=en

It was created to solve complex ocean and sea issues. Since then, this international agreement has set legal norms for maritime boundaries, navigation, marine resource extraction, environmental protection, and marine ecosystem sustainability(1). However, ocean and water problems have altered over the past ٤٠ years as the world has developed. Climate change has major implications, including sea level rise, ocean acidification, and marine ecological alterations(2).

The emergence of the climate and biodiversity crises is placing many parts of the global institutional architecture under severe strain, and UNCLOS is not distinctive in that regard. . Some of its omissions are perhaps forgivable: the Convention was drafted before widespread recognition of the massive problem of climate change and it is not surprising that it contains no reference to either greenhouse gas emissions or the ocean's role as perhaps the world's most important carbon sink(3).

Although the UNCLOS remained silent about climate change and Greenhouse Gas emissions (GHG), the provisions of Part XII entitled "Protection and preservation of the marine environment" are relevant to address these issues. Thus, Article ١٩٢ states that "States have the obligation to protect and preserve the marine environment", and measures taken to do so "rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life" (Art. ١٩٤,٥). This general obligation may well apply to ecosystems such as coral reefs and species affected by climate change, particularly global warming and ocean acidification(4).

The obligation to protect and preserve the marine environment is supplemented with other provisions to tackle marine environment pollution, which includes general measures to prevent, reduce and

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(1) Shivam Kumar Pandey, Marapaka Pavithra, Op. Cit., P.4.

(2) Ibid.

(3) Chris Armstrong, (August 2023), The United Nations Convention on the Law of the Sea, global justice and the environment, Global Constitutionalism, Cambridge University Press, Volume 13, Issue 1. https://www.cambridge.org/core/journals/global-constitutionalism/article/united-nations-convention-on-the-law-of-the-sea-global-justice-and-the-environment/0E40CF82CD994E02D22AC72A96C8FD9A

(4) Bleuenn Guilloux, Romain Schumm, (November 2016), "Which International Law for Ocean and Climate?", ocean-climate.org, p.81
Available: https://www.ocean-climate.org/wp-content/uploads/2017/03/international-law-161024_ScientificNotes_Oct2016_BD_ppp-14.pdf

control pollution whatever the source (Art. ١٩٤), and specific measures such as, measures to combat pollution from land-based sources (Art. ٢٠٧), pollution by dumping (Art. ٢١٠), pollution from vessels (Art. ٢١١) and pollution from or through the atmosphere (Art. ٢١٢). Although GHG emissions are not specifically mentioned in the UNCLOS as a source of pollution of the marine environment, it is quite possible to interpret Part XII to include this type of pollution(1).

The UNCLOS defines "pollution of the marine environment" as: "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…"(2) Besides, Article ١٩٤ of UNCLOS stresses that these substances are harmful or noxious. From above, we can summarize the features of pollution as follows: **١- its harmful nature; ٢- its anthropogenic origin; ٣- its introduction into the marine environment(3).**

Current research confirms that greenhouse gas emissions from various human activities contributing to climate change have significantly impacted the marine environment, leading to sea-level rise, ocean acidification and ocean warming. Furthermore, climate change-induced events such as large-scale fish mortality, land inundation, and unprecedented natural disasters have inflicted colossal damage on human economies and security. As a result, most greenhouse gases are considered harmful or noxious. Additionally, since the pre-industrial period, human societies have generated significant amounts of greenhouse gases that have been released into the atmosphere and indirectly absorbed by the oceans. Thus, the three elements of pollution are met (harmful nature, anthropogenic origin, and its introduction into the marine environment) (4).

The United Nations Convention on the Law of the Sea (١٩٨٢) established a framework for the protection and preservation of the

(1) Ibid.
(2) See: (Article 1 (parag.1 / 4) of The United Nations Convention on the Law of the Sea (UNCLOS 1982)
(3) Muye Xu, (October 2023), Integrating Climate Change into the Law of the Sea Convention:An Examination of Feasibility, Lecture Notes in Education Psychology and Public Media, Volume 20, p.139.
DOI: 10.54254/2753-7048/20/20231493
(4) Ibid., pp.139, 140.

marine environment through provisions for joint and several liability. Article ١٣٩ stated that "… damage caused by the failure of a State Party or international organization to carry out its responsibilities under this Part shall entail liability; States Parties or international organizations acting together shall bear joint and several liability…"; Additionally, Article ٢٣٥ affirms that "States are responsible for the fulfillment of their international obligations concerning the protection and preservation of the marine environment. They shall be liable in accordance with international law" (1).

٣- The United Nations Convention on Biological Diversity ١٩٩٢ (UNCBD)

The Convention on Biological Diversity (CBD) was established in response to the increasing threats to global biodiversity, recognizes the intrinsic value of biological resources for humanity's economic and social development. As species extinction rates rise due to human activities, the CBD aims to conserve biological diversity, promote sustainable use, and ensure equitable sharing of benefits from genetic resources, the Convention was formally adopted in ١٩٩٢ during the Rio Earth Summit, receiving widespread support. Ultimately, the CBD seeks to balance ecological integrity with human development needs for the benefit of current and future generations(2).

In fact, endangering marine environment would contribute to destruction of marine biodiversity, threatening the marine environment, and accelerate the pace of climate change. Several international legal instruments aimed to protect the marine environment, including the Convention on Biological Diversity (CBD)(3).

Recent estimates indicate that more than ١٥٠٠ marine vertebrates and invertebrates are suffering from significant population declines

(1) See: Article 139 (para2) and Article 235 (para1) of the United Nations Convention on the Law of the Sea (1982), Ibid.

(2) See: Convention on Biological Diversity. (1992) https://www.cbd.int/convention/text/

(3) Naswar, Maskun, Nurul Habaib Al Mukarramah, Josse Charmario Wara Angi, Valeria Erika Sari Palilling, (2023), Legal protection for environment and coastal community from marine ecosystem degradation and climate change impact. Journal of Law and Sustainable Development, volume 11, no.(9), p.4. https://doi.org/10.55908/sdgs.v11i9.978

and habitat loss, undergoing severe threat of extinction. Through **Aichi Target ١٢**,(1) the Convention on Biological Diversity (CBD) called for actions to prevent extinction and ensure improved conservation status of known threatened species by ٢٠٢٠. The "draft of the Post-٢٠٢٠ Framework" indicates to a notable reduction of the number of threatened species, set new, ambitious conservation goals for ٢٠٥٠ and associated milestones for ٢٠٣٠. While threatened species face several challenges for their persistence due to manifold local stressors, rapid anthropogenic climate change is driving them even closer to extinction. Under a fast-shifting climate, the identification of species under a higher risk to changes in climatic conditions constitutes a first step toward prioritizing our conservation actions(2).

The Convention on Biological Diversity (CBD) played a crucial role in addressing climate change through its post-٢٠٢٠ global biodiversity framework, established in decision ١٤/٣٤ by the Conference of the Parties. This framework outlines ٢١ actionable targets aimed at urgent implementation over the next decade, culminating in ٢٠٣٠. Among these targets, Target ٨ specifically emphasized the need to minimize the impact of climate change on biodiversity. It advocated for ecosystem-based approaches that not only support biodiversity but also enhance climate change mitigation and adaptation efforts. This target underscores the interconnectedness of biodiversity and climate health. Furthermore, it stressed the importance of ensuring that all climate actions are harmonized with the principles of the CBD, avoiding any adverse effects on biodiversity (3).

٤- The United Nations Framework Convention on Climate Change١٩٩٢ (UNFCCC)

The last half decade has seen heightening awareness of ocean issues within the sphere of climate policy. This recognition has evolved from

(1) The Aichi biodiversity targets were established by the UN Convention of Biological Diversity and consist of 20 specific targets to address and mitigate biodiversity loss across the globe ; see: https://earth.org/what-are-the-aichi-biodiversity-targets/

(2) Anastasia Chatzimentor, Aggeliki Doxa, Stelios Katsanevakis, Antonios D. Mazaris, (2023), Are mediterranean marine threatened species at high risk by climate change?. Global Change Biology, volume (29), issue (7), pp1809, 1810. https://doi.org/10.1111/gcb.16577

(3) CBD, (2021), First draft of the post-2020 global biodiversity framework, 3rd meeting online 23 August- 3 September 2021, pp.1,6,7. cbd.int/doc/c/abb5/591f/2e46096d3f0330b08ce87a45/wg2020-03-03-en.pdf.

isolated mentions to a push toward more convergence between climate and ocean governance [1].

The World Meteorological Organization and the United Nations Environment Programme jointly established the Intergovernmental Panel on Climate Change to provide scientific advice to policy-makers on global climate change. The publication of the IPCC's First Assessment Report led to the initiation of negotiations on a Framework Convention on Climate Change, which came into being in ١٩٩٢,[2] and adopted on May ٩, ١٩٩٢ and "opened for signature" at the Earth Summit in Rio de Janiero, Brazil June ٣-١٤, ١٩٩٢. It entered into force in March ١٩٩٤ after a sufficient number of countries ratified it[3].

Today, it has near-universal membership. The countries that have ratified the Convention (١٩٨ countries) have become Parties to the Convention [4].

The ١٩٩٢ United Nations Framework Convention on Climate Change (UNFCCC) and its subsequent treaties represent an almost-universal architecture of international law through which Parties work to reduce GHG emissions and adapt to climate change [5].

The UNFCCC is built on five main components: objective, principles[6], commitments, finance mechanism and settlement of

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(1) Bobbi-Jo Dobush, Natalya D. Gallo, Melania Guerra, Bleuenn Guilloux, Elisabeth Holland, Sarah Seabrook & Lisa A. Levin, (2022), A new way forward for ocean-climate policy as reflected in the UNFCCC Ocean and Climate Change Dialogue submissions, Climate Policy, VOL. 22, NO. 2, p.255.https://doi.org/10.1080/14693062.2021.1990004

(2) Jericho Trio, (September 2023), The Road to Kyoto: A multiple logistic regression analysis on predicting North American commitments to the Kyoto Protocol, Research Gate, P.2. DOI: 10.13140/RG.2.2.12993.12649

(3) https://www.inuitcircumpolar.com/united-nations-framework-convention-on-climate-change-unfccc/

(4) https://unfccc.int/process-and-meetings/what-is-the-united-nations-framework-convention-on-climate-change#:~:text=The%20198%20countries%20that%20have,ultimate%20aim%20of%20the%20UNFCCC and; https://treaties.un.org/pages/ViewDetailsIII.aspx?src=TREATY&mtdsg_no=XXVII-7&chapter=27&Temp=mtdsg3&clang=_en&_gl=1*111jrch*_ga*MTExNTkyNjc2My4xNjgyNzE4NTM5*_ga_TK9BQL5X7Z*MTcyMDk1OTcyMi42MS4wLjE3MjA5NTk3MjIuMC4wLjA.#1

(5) Bobbi-Jo Dobush, et al., Op. cit., p.255.

(6) Article 3 of UNFCCC encompasses fundamental principles that enhance

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disputes[1].

According to UNFCCC, it is required that the parties work towards achieving a stabilization of greenhouse gas concentrations in the atmosphere. The goal is to reach a level that effectively prevents any harmful human-induced disruptions to the climate system[2]. Parties to the UNFCCC have recognized the importance of protecting the ocean and its ecosystems in the Convention: - In the Convention Parties agreed to protect the climate system (Article ٢), defined as the totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions (Article ١. pra.٣);[3] Also the UNFCCC explicitly mentioned possible adverse effects of sea level rise on islands and coastal areas in its preamble (Recital ١٢ Preamble) and of 'integrated plans for coastal zone management' in Article ٤(١) (f) and (e) [4].

The Convention also recognizes the role that oceans, coastal, and marine ecosystems play as sinks and reservoirs of all greenhouse gases. It emphasizes the importance of cooperation in preparing for adaptation to the impacts of climate change and in developing appropriate and integrated plans for the management of coastal zones and water resources[5].

However, the convention has faced some criticism for not specifying emission levels or timelines, which makes it makes it challenging to determine whether Article ٢ has been breached or not. Besides that, UNFCCC cannot serve as a legal basis for state responsibility regarding to climate change Due to its lack of clear,

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the protection of the environment from climate change. Among these principles are: Principle of Equity; Principle of Sustainable Development; Principle of Common but Differentiated Responsibilities; Principle of Prevention.

These principles serve as a guide framework for parties in any actions they undertake to achieve the objectives of the Convention, contributing to the enhancement of international cooperation and the commitment of nations to protect the environment for future generations; See: Article 3 of the United Nations Framework Convention on Climate Change (UNFCCC, 1992).

(1) Muye Xu, Op.cit., p.138.

(2) Ibid, p.139.

(3) https://unfccc.int/topics/ocean

(4) Bobbi-Jo Dobush, et al., Op. cit.,p.255.

(5) See Article 4 (para.1 "d, e") of the United Nations Framework Convention on Climate Change (UNFCCC, 1992).

legally binding obligations. This situation allows signatory states a significant degree of discretion in defining their rights and obligations. Therefore, pinpointing precise state obligation within UNFCCC has been a challenging task(1).

(1) Muye Xu, Op. cit., p.139.

UN Climate Change Conference (UNFCCC COP)

The Conference of the Parties (COP) is the supreme decision-making body of the Convention. All States that are Parties to the Convention are represented at the COP, where they review the implementation of the Convention and any legal instruments adopted by the COP. They also take decisions necessary to promote the effective implementation of the Convention, including institutional and administrative arrangements [1].

Every year, countries that have joined the United Nations Framework Convention on Climate Change (UNFCCC) meet to measure progress and negotiate multilateral responses to climate change. Today, there are ١٩٨ Parties to the Convention. The first COP was held in Berlin, Germany, in ١٩٩٥, while the ٢٨th COP was held at the end of ٢٠٢٣ in Dubai, United Arab Emirates. This conference featured the first Global Stock take, where States assessed the progress made towards the goals set in the Paris Agreement and charted a course of action. COP٢٩ is scheduled to be held in Baku, Azerbaijan, in November ٢٠٢٤[2].

A- Conference of the Parties (COP١٩)

Warsaw International Mechanism for Loss and Damage (WIMLD)

At COP١٩ in November ٢٠١٣, the Conference of the Parties to the UNFCCC decided to establish institutional arrangements, such as an international mechanism, to address loss and damage associated with the impacts of climate change in developing countries that are particularly vulnerable to the adverse effects of climate change. In Warsaw, during COP١٩, the Parties to the UNFCCC successfully create of the Warsaw International Mechanism for Loss and Damage (WIMLD) [3].

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(1) https://unfccc.int/process/bodies/supreme-bodies/conference-of-the-parties-cop

(2) https://www.un.org/en/climatechange/un-climate-conferences

(3) Doreen Stabinsky, Juan P. Hoffmaister, (2015), Establishing institutional arrangements on loss and damage under the UNFCCC: the Warsaw International Mechanism for Loss and Damage, in, International Journal of Global Warming, Volume 8, Issue 2, p.297

Establishing institutional arrangements on loss and damage under the UNFCCC: the Warsaw International Mechanism for Loss and Damage (inderscienceonline.com)

The term **'loss and damage'** broadly refers to the entire range of damage and permanent loss "associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change" that can no longer be avoided through mitigation nor can be avoided through adaptation. This phrase first appears in UNFCCC texts in the Bali Action Plan [(1)].

The Warsaw International Mechanism for Loss and Damage (WIM) was established to effectively address the impacts of climate change by implementing comprehensive strategies for loss and damage resulting from both extreme weather events and gradual climate changes. Its role involves enhancing knowledge of risk management approaches, fostering collaboration among stakeholders, and increasing support through finance, technology, and capacity building. While the WIM recognizes that adaptation and risk management are essential for mitigating loss and damage, it also acknowledges that some impacts exceed what can be addressed through adaptation alone. Therefore, the mechanism promotes a comprehensive and integrated approach that includes mitigation efforts to tackle the multifaceted challenges posed by climate change [(2)].

B- Conference of the Parties (COP٢٥)

Following COP٢١, interest in mainstreaming the ocean into climate negotiations grew. In ٢٠١٦, governments solicited the Intergovernmental Panel on Climate Change (IPCC) to prepare a Special Report on the Ocean and Cryosphere in a Changing Climate [(3)].

However, it was not until COP ٢٥, the Chile Madrid Time for Action ٢٠١٩, governments recognized the need to strengthen the understanding of, and action on, ocean and climate change under the UNFCCC. COP٢٥ mandated the first Ocean and climate change dialogue, drawing upon the knowledge and scientific findings from the IPCC Special Report on the Ocean and Cryosphere in a changing climate[(4)].

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(1) Doreen Stabinsky, et al., Op. Cit.

(2) Laura Schäfer, Sönke Kreft, (2014), Loss and damage: roadmap to relevance for the Warsaw International Mechanism. German Watch, p.8. and; Report of the conference of the Parties (COP) on its nineteenth session, held in Warsaw from 11 to 23 November 2013, https://unfccc.int/decisions?f%5B0%5D=conference%3A3936&f%5B1%5D=session%3A3938

(3) Bobbi-Jo Dobush, et al., Op. Cit., p.256.

(4) https://unfccc.int/topics/ocean

COP٢٥, the last COP before the onset of the COVID-١٩ pandemic, was labelled by its Chilean Presidency as the 'Blue COP', with the aims of building political momentum to 'oceanize' the climate debate and to address the ocean-climate nexus in a more synergistic manner . COP٢٥ hosted over ١٠٠ ocean-relevant side events and press conferences, covering topics such as ocean-based solutions, fisheries, maritime transport, maritime boundaries, ocean management, and ocean governance(1). Ultimately, the COP٢٥ decision became the first COP decision to mention the importance of the ocean as a part of the earth's climate system. At the same time, an agreement was reached to establish the Dialogue on Ocean and Climate Change ("Ocean Dialogue") at the SBSTA ٥٢ in June ٢٠٢٠. This result was welcomed by all stakeholders of the ocean group (2).

In conclusion, although the UNFCCC constitutes a vital tool in the global fight against climate change, but it does fall short in certain key areas. It lacks clear, legally enforceable articles concerning the assumption and allocation of state responsibilities for addressing climate change. These deficiencies can lead to disagreements and a lack of concrete action, obstructing global climate change efforts. Additionally, the framework does not adequately address compensation for states most impacted by climate change, those who have contributed least to the crisis. These countries face severe climate impacts, and without robust provisions for recognizing and compensating these damages, they struggle to manage these immense changes (3).

٥- The Kyoto Protocol

One of the much needed declarations to protect the nature was the Kyoto Protocol. (4) At the First Conference of the Parties, Parties recognized the inadequacy of the UNFCCC's Convention's voluntary targets and initiated the process of negotiating legally binding targets

(1) Bobbi-Jo Dobush, et al., Op. Cit., p.256.
(2) Mai Fujii, (May 2020), The Ocean in the United Nations Framework Convention on Climate Change, Ocean Policy Research Institute of the Sasakawa Peace Foundation, pp.4,5.
https://www.spf.org/opri/en/global-data/opri/perspectives/prsp_009_2020_fujii_en.pdf
(3) Muye Xu , Op. Cit., p.139.
(4) T. Samraj, Op. Cit.,p.11.

for developed countries and those with economies in transition. This process culminated at COP-٣, giving birth to the Kyoto Protocol, a historic landmark in international environmental law. (1) The Kyoto Protocol, the first international treaty to set legally binding targets to cut greenhouse gas emissions, was adopted on ١١ December ١٩٩٧, in Kyoto, Japan. The agreement, which entered into force in ٢٠٠٥ and was ratified by ١٩٢ Parties,(2) This agreement helped to boost the effectiveness of the ١٩٩٢ UNFCCC. It compelled the industrialized countries to enact necessary legislations to reduce the emission of greenhouse gases within the targeted period. Its main target was the reduction of such gases mainly on European countries which were highly industrialised.(3) The Kyoto Protocol commits developed countries and economies in transition to reduce their overall greenhouse gas emissions to at least ٥٪ below ١٩٩٠ levels during the five-year commitment period ٢٠٠٨-٢٠١٢. This commitment is differentiated between countries, with the EU reducing by ٨٪, the US by ٧٪, Japan by ٦٪, while the Ukraine and Russia stabilize, and Australia and Iceland are allowed to increase their emissions. Parties can use a range of market-based instruments and land use activities to achieve this. (4) To enable countries to meet their emissions reduction targets, the Kyoto Protocol established three market-based mechanisms: First, the Emissions Trading Facility, where countries that emit less than they are allowed to can sell this amount to industrialized countries that produce more than they should. In this way, it becomes economically beneficial to reduce emissions. The second and third mechanisms (the Clean Development Mechanism and the Joint Implementation Mechanism); where countries can invest in a project to reduce in an emission-reducing project and gain credit points(5). However, the only point raised that related to the ocean (a part of coastal ecosystems) was sinks(6).

(1) Jericho Trio, Op. Cit., P.2.
(2)https://www.un.org/en/climatechange/marking-kyoto-protocol%E2%80%99s-25th-anniversary
(3) T. Samraj, Op. Cit., p.11.
(4) Jericho Trio, Op. Cit., P.2.
(5)https://www.un.org/en/climatechange/marking-kyoto-protocol%E2%80%99s-25th-anniversary
(6) Mai Fujii, Op. Cit., p.8.

The Kyoto Protocol is binding only on developed countries, as they are largely responsible for the high levels of greenhouse gases in the atmosphere. While it is not binding on developing countries, including major carbon emitters China and India, to take action(1). However, the "Doha Amendment" building upon the foundation of the KP, deepened the imposition of emission reduction obligations on developing countries,(2) This so-called "Doha Amendment" added new emission-reduction targets for the second commitment period, ٢٠١٢–٢٠٢٠, for participating countries(3). However, it is important to note that the emission reduction targets stipulated under the KP represent voluntary national commitments directed towards mitigating climate change. They do not serve to impose state responsibility or penalties on states failing to meet their designated emission reduction benchmarks. Besides, the KP does not provide a legal basis for loss and damage from climate change; therefore, it is insufficient to protect the interests of small island states from damage and loss of climate change(4). In ٢٠١٥, however, countries agreed on yet another legally binding climate treaty, the Paris Agreement, which entered into force in November ٢٠١٦ and effectively replaced the Kyoto Protocol(5).

٦- The Paris Agreement

The Paris Agreement, adopted in ٢٠١٥ under the UN Framework Convention on Climate Change (UNFCCC), is the most recent and most comprehensive multilateral climate treaty. It agreed together the parties to the UNFCCC in committing to strengthen the global response to the threat of climate change; and has so far become legally binding for ١٩٥ parties. Its objectives reflect a near-universal consensus on the science-based to address climate change: the agreement aims to holding the global average temperature increase to well below ٢°C compared with pre-industrial levels and pursuing

(1)https://www.un.org/en/climatechange/marking-kyoto-protocol%E2%80%99s-25th-anniversary
(2) Muye Xu, Op. Cit., p.139.
(3)https://www.un.org/en/climatechange/marking-kyoto-protocol%E2%80%99s-25th-anniversary
(4) Muye Xu, Op. Cit., p.139.
(5)https://www.un.org/en/climatechange/marking-kyoto-protocol%E2%80%99s-25th-anniversary

efforts to limit the increase to ١,٥°C; increasing the ability to adapt to the adverse impacts of climate change and foster resilience and low greenhouse gas emissions.(1) The Agreement is particularly significant for the protection of the marine environment, as it recognizes the interconnectedness of climate change, biodiversity, and ocean health.(2)

One of the primary ways the Paris Agreement contributes to the protection of the marine environment is through its emphasis on reducing greenhouse gas emissions. Climate change poses severe threats to marine ecosystems, including ocean acidification, rising sea temperatures, and altered species distributions.(3) By committing to the Paris Agreement's emissions reduction targets, countries can mitigate these impacts and help preserve marine biodiversity. Research indicates that achieving the goals of the Paris Agreement could significantly benefit marine fisheries by reducing changes in species composition and catch losses associated with climate change.(4) This is particularly important for small island nations and coastal communities that rely heavily on fisheries for food and livelihoods (5).

The parties to the Paris Agreement noted the importance of ensuring the integrity of all ecosystems, including the oceans, and protecting biodiversity, which some cultures recognize as the Earth's security (6).

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(1) Christina Voigt, (July 2023), The power of the Paris Agreement in international climate litigation, Review of European, Comparative & International Environmental Law "RECIEL", Volume32, Issue2, Special Issue: International Climate Litigation, p.238.

(2) See: Paris Agreement 2015; https://unfccc.int/sites/default/files/english_paris_agreement.pdf

(3) U. Rashid Sumaila, Travis C. Tai, Vicky W. Y. Lam, William W. L. Cheung, Megan Bailey, Andrés M. Cisneros-Montemayor, Oai Li Chen, Sumeet S. Gulati, (2019), Benefits of the paris agreement to ocean life, economies, and people. Science Advances, Vol 5, Issue 2 , pp.1,2 , https://doi.org/10.1126/sciadv.aau3855

(4) Vicky W. Y. Lam, William W. L. Cheung, Gabriel Reygondeau, U. Rashid Sumaila (2016). Projected change in global fisheries revenues under climate change. Scientific Reports, Volume 6(1), p.1, https://doi.org/10.1038/srep32607

(5) William W. L. Cheung , Gabriel Reygondeau, Thomas L. Frölicher, (2016), Large benefits to marine fisheries of meeting the 1.5°c global warming target, Science Vol. 354, Issue 6319, p.1591. https://doi.org/10.1126/science.aag2331

(6) https://unfccc.int/topics/ocean

The Preamble of the Paris Agreement stated clearly in Paragraph ١٣,[1] which covers the importance of preserving biodiversity and ecosystems, that the ocean is included in its definition of ecosystems. It emphasizes the importance of preserving ecosystems (including the ocean) and biodiversity, which has never before been the subject of concrete negotiations and agreements under the UNFCCC [2].

The Paris Agreement also encourages countries to enhance their capacity to adapt to climate change, which is crucial for protecting marine ecosystems. Adaptation strategies may include the establishment and management of Marine Protected Areas (MPAs), which serve as critical tools for conserving marine biodiversity and enhancing ecosystem resilience. MPAs provide refuges for marine species, allowing them to adapt to changing environmental conditions while maintaining essential ecosystem functions. The Agreement's focus on adaptation aligns with the goals of the Convention on Biological Diversity (CBD) and other international frameworks aimed at protecting marine environments from climate change [3].

The Paris Agreement also emphasizes the importance of international cooperation and knowledge sharing in addressing climate change. This collaborative approach is essential for developing effective responses to the challenges posed by climate change, as it enables countries to share best practices and lessons learned in marine conservation and management[4].

The Agreement encourages countries to work together to enhance their collective capacity to address climate impacts on marine

(1) See: Paragraph 13 of the Paris Agreement's Preamble that states "Noting the importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity [...] when taking action to address climate change,"
https://unfccc.int/sites/default/files/english_paris_agreement.pdf

(2) Mai Fujii, Op. Cit., pp.8,9.

(3) Klerk, B., (2022), Protecting the marine environment from the impacts of climate change: a regime interaction study, Review of European Comparative & International Environmental Law, Volume32, Issue1, p.4647. https://doi.org/10.1111/reel.12487

(4) Mastrorillo, M., & Béné, C., (2019), The role of international cooperation in marine conservation: Lessons from the Paris Agreement. Ocean & Coastal Management, Vol. 174, p. 68. https://doi.org/10.1016/j.ocecoaman.2019.03.021 and; Paris Agreement (2015).

ecosystems, fostering resilience in the face of ongoing environmental changes.

The Paris Agreement contains several well-known legally binding obligations for parties. Most of these obligations are procedural in nature and require parties to submit specific information at certain points in time in regular intervals and to report or account in accordance with agreed rules. These obligations include for all parties to: prepare, communicate and maintain successive nationally determined contributions (NDCs); biennially provide information on national inventories and information necessary to track progress made in implementing and achieving an NDC; and participate in the facilitative multilateral consideration of progress under the Agreement's enhanced transparency framework(1). For developed country Parties, it also includes the submission of specific information on support, according to Articles ٩(٥) and ٩(٧). All of these obligations require a specific action and can, thus, be considered to establish obligations of result that are also judicially reviewable (2).

In conclusion, the Paris Agreement plays a vital role in the protection of the marine environment from climate change. By emphasizing on emission reduction, adaptation strategies, integration of climate considerations into policies, international cooperation, and recognition of local knowledge, the Agreement addresses the multifaceted challenges posed by climate change to marine ecosystems. As the global community continues to confront the impacts of climate change, the ongoing implementation and strengthening of the Paris Agreement will be essential for ensuring the resilience and sustainability of marine environments.

In reviewing the international Legal Framework for Protecting the Marine Environment in force of Climate Change, this section attempts to review a number of the most important international instruments and agreements that have addressed this issue. From this standpoint, it can be said that the Stockholm Declaration of ١٩٧٢, the United Nations Convention on the Law of the Sea of ١٩٨٢, the Convention on Biological Diversity of ١٩٩٢, the United Nations Framework Convention on Climate Change of ١٩٩٢, and subsequent

(1) Christina Voigt, Op. Cit., p.239.
(2) Ibid.

agreements such as the Kyoto Protocol and the Paris Agreement highlight the urgent need for global cooperation to combat climate change and protect marine environments.

The Stockholm Declaration laid the foundation for environmental protection, while UNCLOS outlined state's responsibilities for ocean governance. The CBD emphasizes biodiversity conservation in relation to climate resilience. The UNFCCC facilitated international dialogue, with ١٩٨ Parties participating in climate negotiations at the Conference of the Parties (COP). The Kyoto Protocol established legally binding emission reduction targets for developed nations, though it fell short in compelling action from developing countries. The Paris Agreement, adopted in ٢٠١٥, represents a significant advancement by committing ١٩٥ Parties to limit global temperature increases and acknowledging the interconnectedness of climate change, biodiversity, and ocean health. Notably, the Agreement's Preamble includes the ocean in its definition of ecosystems, marking a historic acknowledgment of marine issues in climate negotiations. It encourages countries to enhance adaptive capacity, such as through Marine Protected Areas (MPAs), and emphasizes international cooperation and knowledge sharing in addressing climate impacts on marine ecosystems. The Agreement's legally binding procedural obligations ensure transparency and accountability in emission reductions and progress reporting. Overall, the Paris Agreement plays a vital role in safeguarding marine environments from climate change, addressing the multifaceted challenges they face, and ensuring their resilience and sustainability for future generations.

Section two: Legal Principles Governing International Responsibility for climate change

Article ٣٨ of the Statute of International Court of Justice recognizes "general principles of law recognized by civilized nations" as a source of law. These general principles serve to fill gaps not addressed or covered by treaties. Consequently, courts rely on these principles in the absence of treaty. The international community has recognized these specific legal principles to mitigate environmental damage and promote environmental protection [(1)].

This section elaborates the key legal principles that governing the environmental responsibility in public international law, as follows:

١- The No-Harm Principle

The 'no-harm' principle, conceived by the ICJ as a principle according to which States must prevent activities within their jurisdiction from causing extraterritorial environmental harm, applies to the regulation of greenhouse gas emissions (GHG) that are interfering with the global climate system. As a helpful complement to treaty-based obligations, The no-harm principle applies to the regulation of the causes of climate change The customary nature of the no-harm principle is now firmly established. As a general obligation of due diligence from which a number of procedural obligations arise, this principle has significant consequences for States[(2)]. Also this principle is one of the ideas that structure environmental law in general and that has particular importance in the fight against climate change. By its nature, this principle is of a customary order. Moreover, it has been applied by international jurisdictions, particularly by the International Court of Justice, when it issued its advisory opinion on the use of nuclear weapons ١٩٩٦ [(3)].

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(1) Christopher M Inwang, (2021), Polluter pays principle; A jus cogen or customary international law, International Journal of Law, Volume 7, Issue 1, p.132.
https://www.lawjournals.org/assets/archives/2021/vol7issue1/7-1-42-484.pdf

(2) Sandrine Maljean-Dubois, (2021), The No-Harm Principle as the Foundation of International Climate Law. Debating Climate Law, p.1.
https://shs.hal.science/halshs-03286152/document

(3) Jesús Francisco Ramírez Bañuelos, (16 September 2021), Climate change in international, Revista Electrónica de Derecho Internacional

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The International Court of Justice handed down its advisory opinion on the request made by the General Assembly of the United Nations on the question concerning the Legality of the Threat or Use of Nuclear Weapons; it notes that law essentially implies comparisons in which humanitarian considerations have to be weighed against military requirements. Thus, the collateral damage caused to the civilian population must not be 'Lexcessive" as compared to the "military advantage" offered. The harm caused to combatants must not be "greater than that unavoidable to achieve legitimate military objectives". On that account, nuclear weapons of mass destruction can only be used lawfully in extreme cases(1).

In this context; in its Advisory Opinion on Environment and Human Rights, the Inter-American Court of Human Rights stated that the obligation to prevent transboundary environmental damage implies State responsibility for 'any significant damage caused to persons outside their borders by activities originating in their territory or under their effective control or authority'. Similarly, the United Nations (UN) Human Rights Committee, CESCR and other human rights bodies accept that States are bound by extraterritorial human rights obligations for corporate activities within their control. This standard opens considerable opportunities for claims, as States generally act as the 'mind and will' of their State-owned enterprises(2). Although the no-harm principle also affirmed in the Trail Smelter case concerns air pollution, it can also be extended to other forms of transboundary damage, including those caused to shared water resources(3).

Contemporáneo, Universidad Nacional de La Plata, Argentina, vol. 4, no. 4 . http://portal.amelica.org/ameli/journal/283/2832345004/html/

(1) The International Court of Justice,(8 July 1996), Summaries of Judgments, Advisory Opinions and Orders of the International Court of Justice about LEGALITY OF THE THREAT OR IJSE OF NUCLEAR WEAPONS Advisory Opinion,p.100:https://www.icj-cij.org/public/files/case-related/95/7497.pdf

(2) Steve Lorteau. (July 2023), The potential of international 'State-as-polluter' litigation, RECIEL (Review of European, Comparative & International Environmental Law), Volume32, Issue2, "Special Issue: International ClimateLitigation",p.262. https://onlinelibrary.wiley.com/doi/epdf/10.1111/reel.12492

(3) Mara Tignino, Christian Bréthaut, (6 October 2020), The role of international case law in implementing the obligation not to cause signifcant harm, International Environmental Agreements: Politics, Law and Economics, p.644.
https://link.springer.com/article/10.1007/s10784-020-09503-6

٢- Standard of due diligence in the prevention of significant transboundary environmental harm:

Due diligence, derived from the principle of no-harm, has become a customary standard and has been employed by the International Court of Justice in their provisions(1). "The Court in the Pulp Mills on the River Uruguay case (Argentina v. Uruguay) points out that the principle of prevention, as a customary rule, has its origins in the due diligence that is required of a State in its territory. It is 'every State's obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States'. A State is thus obliged to use all the means at its disposal in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing significant damage to the environment of another State. This Court has established that this obligation 'is now part of the corpus of international law relating to the environment'(2).

From Here; The due diligence obligation provides a legal basis for State responsibility claims in connection with climate change damage, As the no-harm principle is a due diligence obligation, a State can be held responsible on the basis that it has failed to take necessary and adequate measures to prevent adverse impacts on the climate system,(3) and its deserve to mentioning that the requirement to exercise due diligence, as the governing primary norm, is an obligation of conduct that applies to all phases of a project (e.g., planning, assessment of impact, decision to proceed, implementation, post-implementation monitoring). In the planning phase, a failure to exercise due diligence to prevent significant transboundary environmental harm can lead to the responsibility of the State of origin even in the absence of material damage to potentially affected States(4).

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(1) Jesús Francisco Ramírez Bañuelos, Op. Cit.

(2) See: The International Court of Justice, SEPARATE OPINION OF JUDGE DONOGHUE Obligation under customary international law to exercise due diligence in preventing significant transboundary environmental harm — Environmental Impact Assessment — Notification — Consultation, p. 123. https://www.icj-cij.org/public/files/case-related/150/150-20151216-JUD-01-05-EN.pdf

(3) Sandrine Maljean-Dubois, Op. Cit (2021), The No-Harm Principle as the Foundation of International Climate Law. Debating Climate Law, p.4. https://shs.hal.science/halshs-03286152/document

(4) The International Court of Justice, Separate Opinion, Op. Cit., p.124.

The International Law Commission, in its ٢٠٠١ articles on the prevention of transboundary damages, identifies the conditions under which state action can be considered to manifest due diligence. The ILC's Special Rapporteur, P.S. Rao, in his second and third reports, identifies the definitional elements of due diligence, i.e.: (١) a State should have a legal system and material means sufficient to guarantee the fulfillment of its international obligations; (٢) a State should establish and maintain an adequate administrative apparatus to enable it to fulfill these obligations; (٣) the degree of due diligence required may vary according to the degree of development and technical awareness of individual States; (٤) industrialized and technologically advanced States may be expected to take more far-reaching preventive measures; ٥) each State, irrespective of its level of development, must monitor the risky activities carried out in its territory; ٦) the degree of diligence required must be proportionate to the degree of risk involved in the type of hazardous activity in question; ٧) the damage must be foreseeable; ٨) the State must know or ought to have known that activities entailing the risk of significant transboundary damage are being carried out in its territory; ٩) the greater the degree of unacceptable damage, the greater the diligence required to prevent transboundary damage must be[1].

In the context of international State-as-polluter litigation, the claimant would need to establish a State's lack of due diligence in the face of a foreseeable transboundary harm. This burden of proof is grounded in the due diligence duty to prevent environmental harm, even if such a harm has not yet occurred. States are bound to a duty to prevent significant transboundary harm, which encompasses the due diligence obligation to regulate both state pollution sources. Both the International Court of Justice (ICJ) and the International Tribunal for the Law of the Sea (ITLOS) have held that the due diligence obligation applies to 'public and private operators'. In the Pulp Mills case, for instance, the ICJ clarified that these obligations entail 'not only the adoption of appropriate rules and measures, but also a certain level of vigilance in their enforcement and the exercise of administrative control applicable to public and private operators'. This is not to suggest that the content of the due diligence obligation is invariable. Indeed, as ITLOS stated in the Responsibilities and Obligations in the

(1) Maciej Nyka, Op. Cit., P.140.

Area advisory opinion, due diligence 'is a variable concept' that changes in relation to 'time', 'scientific or technological knowledge' and the 'risks involved in the activity', among other factors(1).

If, at a subsequent phase, the failure of the State of origin to exercise due diligence in the implementation of a project causes significant transboundary harm, the primary norm that is breached remains one of due diligence, but the reparations due to the affected State must also address the material and moral damage caused to the affected State (2).

٣- The principle of equity

Brown Weiss identifies **four criteria** which any theory of intergenerational equity must meet. **First**, the theory should be equitable among generations, "neither authorizing the present generation to exploit resources to the exclusion of future generations, nor imposing unreasonable burdens on the present generation to meet indeterminate future needs.'", **Second**, principles of intergenerational equity should be value-neutral; "[t]hey must give future generations flexibility to achieve their goals according to their own values.", **Third**, such principles "should be reasonably clear in application to foreseeable situations."; **Finally**, principles of intergenerational equity "must be generally shared by different cultural traditions and be generally acceptable to different economic and political systems"(3).

The basic concept here is that all generations are partners caring for and using the Earth. Every generation needs to pass the Earth and our natural and cultural resources on in at least as good condition as we received them. This leads to three principles of intergenerational equity: options, quality, and access. **The first, comparable options**, means conserving the diversity of the natural resource base so that future generations can use it to satisfy their own values. **The second principle, comparable quality,** means ensuring the quality of the

(1) Steve Lorteau, Op. Cit., p.263. https://onlinelibrary.wiley.com/doi/epdf/10.1111/reel.12492

(2) The International Court Of Justice, Separate Opinion Op. Cit., P.124. https://www.icj-cij.org/public/files/case-related/150/150-20151216-JUD-01-05-EN.pdf

(3) Lynda M. Collins, (2007) Revisiting the Doctrine of Intergenerational Equity in Global Environmental Governance, Dalhousie Law Journal, Volume30, Issue 1, p.101. https://core.ac.uk/download/pdf/288305264.pdf

environment on balance is comparable between generations. **The third one, comparable access,** means non-discriminatory access among generations to the Earth and its resources(1).

٤-The precautionary principle

Since the early ١٩٩٠s, the precautionary principle has been more or less explicitly incorporated in almost all international treaties on environmental protection. **Especially those** mainly concern marine pollution (e.g., the OSPAR Convention(2) and the ١٩٩٢ Helsinki Convention on the Baltic Sea(3)); air pollution (e.g., the ١٩٩٢ UNFCCC(4));(5) this principle **also** formulated in the Rio Declaration

(1) Brown Weiss, (2008), Climate Change, Intergenerational Equity, and International Law, Vermont Journal of Environmental Law , Volume 9, p. 616 https://scholarship.law.georgetown.edu/cgi/viewcontent.cgi?article=2637&context=facpub

(2) The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) requires contracting parties to take all possible steps to prevent and eliminate pollution of the marine environment. Also, contracting parties are required to take the necessary measures to protect the maritime area against the adverse effects of human activities so as to safeguard human health and to conserve marine ecosystems and, when practicable, restore those areas that have been damaged, see:https://www.unescwa.org/sd-glossary/convention-protection-marine-environment-north-east-atlantic-ospar

(3) The Baltic Marine Environment Protection Commission (also known as Helsinki Commission - HELCOM) is an intergovernmental organization of the nine Baltic coastal countries and the EU, protecting the marine environment from all sources of pollution, see: https://www.unescwa.org/sd-glossary/baltic-marine-environment-protection-commission-helcom

(4) "The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost…)", See Article 3 (para.3) of the United Nations Framework Convention on Climate Change (UNFCCC, 1992).

(5) Didier Bourguignon, (December 2015), The precautionary principle: Definitions, applications and governance" In-Depth Analysis", European Parliamentary Research Service ,p.5. https://www.europarl.europa.eu/RegData/etudes/IDAN/2015/573876/EPRS_IDA(2015)573876_EN.pdf

(١٩٩٢, principle ١٥) provides that scientific certainty is not necessary for States to intervene when there are serious threats that irreversible damage to the environment may be caused(1). the precautionary principle is also mentioned, for example, in the Convention on Biological Diversity (Preamble), in the ٢٠٠٠ Cartagena Protocol on Biosafety (Art. ٩ and ١٠) and in the ٢٠١٠ Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety. It is contained in several conventions on the Marine Environment, in the ١٩٩٩ Protocol on Water and Health to the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Art. ٥), in the ٢٠٠٠ Protocol on the Implementation of the Alpine Convention in the field of Transport (Art. ١), or in the Convention on the Protection of the Rhine (Art. ٤). In short, it is largely enshrined in international environmental treaties(2).

In fact, this principle is currently gaining status as customary international law. This can be seen in the advisory opinion of the Law of the Sea Tribunal in the Seabed Mining case (3).

The ١٩٩٠, the Ministerial Declaration of the Third International Conference on the Protection of the North Sea expands the concept, stating that the contracting governments: 'will continue to apply the precautionary principle, that is to take action to avoid potentially damaging impacts of substances that are persistent, toxic and liable to bio accumulate even where there is no scientific evidence to prove a causal link between emissions and effects' (4).

UNESCO's World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) put forward a 'working definition' in its ٢٠٠٥ report on the precautionary principle, which states that "When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. **Morally unacceptable harm refers to** harm to humans or the environment that is threatening to human life or health, or serious and effectively irreversible, or inequitable to present

(1) Jesús Francisco Ramírez Bañuelos, Op. Cit.,
(2) Yann Kerbrat, Sandrine Maljean-Dubois. (1 Nov 2019), The Role of International Law in the Promotion of the Precautionary Principle, HAL open science, p.3. https://shs.hal.science/halshs-02342746/document
(3) Jesús Francisco Ramírez Bañuelos, Op. Cit.,
(4) Didier Bourguignon, Op. Cit., p.5.

or future generations, or imposed without adequate consideration of the human rights of those affected(1).

Actions are interventions that are undertaken before harm occurs that seek to avoid or diminish the harm. Actions should be chosen that are proportional to the seriousness of the potential harm, with consideration of their positive and negative consequences, and with an assessment of the moral implications of both action and inaction. The choice of action should be the result of a participatory(2).

٥- Environmental Impact Assessment Principle

The content of an EIA cannot usefully be discussed without some understanding of its purpose. According to the Espoo Convention of ١٩٩١, an Environmental Impact Assessment (EIA) is defined as 'a procedure for evaluating the likely impact of a proposed activity on the environment'. The object of such an EIA is to provide national decision makers with information about possible transboundary environmental effects when deciding whether to authorize the activity to proceed and what controls to place on it. An EIA is fundamental to any regulatory system that seeks to identify environmental risk, integrate environmental concerns into development projects and promote sustainable development. It is a tool, which aids informed decision making, but it does not determine whether a project should proceed or how it should be regulated(3).

In the Pulp Mills on the River Uruguay case (Argentina v. Uruguay), the International Court of Justice's (ICJ) supported the principle of Environmental Impact Assessment (EIA) in its interpretation of a bilateral treaty between the Parties by stating: "it may now be considered a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource. Moreover, due diligence, and the duty of vigilance and prevention which it

(1) World Commission on the Ethics of Scientific Knowledge and Technology "COMEST", (March 2005), The Precautionary Principle, UNESCO, France, p.14.

(2) Ibid.

(3) Alan Boyle, (March 2011), Developments in the International Law of Environmental Impact Assessments and their Relation to the Espoo Convention. Review of European Community & International Environmental Law (RECIEL), p.229.
https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.1467-9388.2011.00726.x

implies, would not be considered to have been exercised, if a party planning works liable to affect the régime of the river or the quality of its waters did not undertake an environmental impact assessment on the potential effects of such works"(1).

This judgment is the most significant authority in the field of environmental impact assessment (EIA) in public international law. It is the first occasion on which an international court has held that prior assessment of transboundary impacts is not merely a treaty-based obligation but a requirement of public international law. In fact, the environmental impact assessment was duly carried out by Botnia, the company which owned the plant, and two further EIAs were also prepared by consultants working for the International Finance Corporation (IFC), which funded the construction work(2).

This is why a failure to conduct an environmental impact assessment can give rise to a finding that a State has breached its obligations under customary international law without any showing of material harm to the territory of the affected State(3).

٦- The concept of sustainable development

Climate change is one of the biggest sustainable development challenges. Only by integrating the paradigm of sustainable development in a more effective way into international and domestic law can certain irreversible climate change impacts be avoided(4).

The relationship between the environment and development was described as incompatibility and tension as a result of the contradiction between both concepts, so Article (٢) of United Nations Framework Convention on Climate Change UNFCCC came to form an integrated strategy to reconcile this difference and restore the balance between environment and development. This principle means appreciating the importance of Continue the development process and encourage it, but through methods that support health, environment and safety now and in the long term. This principle basically refers to that type of development that meets the needs of the present generation without detracting from the ability of future generations to also meet their needs(5).

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(1) The International Court Of Justice, Separate Opinion , Op. Cit., p.p.124,125.
(2) Alan Boyle, Op. Cit., p.227.
(3) The International Court Of Justice, Separate Opinion , Op. Cit., p.p.124.
(4) Anita M. Halvorssen Op. Cit., p. 397.
(5) Mohamed Adel Askar, (October 2010), International Climate Protection: a

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This principle is at the core of the Brundtland Report's definition and is also included in principle ٣ of the Rio Declaration. It posits that in their development choices states must preserve the environmental capital they hold in trust for future generations and ensure that it is transmitted in conditions equivalent to those in which it was received. In other words, environmental preservation is necessary to ensure equity between generations; without it, the 'sustainability' of development cannot be ensured(1).

Also sustainable development is also described as an integrative concept, particularly in relation to human rights and social, economic, and environmental objectives. This was reconfirmed at the Johannesburg Conference which emphasized the three reinforcing pillars of sustainable development: economic development, social development, and environmental protection. The only way to successfully achieve economic and social progress is to link them with environmental protection. Principle ٤ of Rio Declaration reiterates the intertwining of development and environmental protection, "[i]n order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it"(2).

٧- The polluter pays principle

Since the early ١٩٩٠s, the polluter pays principle has been recognized in a number of international instruments as a binding principle or a guiding principle.(3) The Organisation for Economic Co-operation and Development held a seminar in ١٩٧١, in Paris on environmental economics where polluter pays principle was the

study within the framework of international agreement law, Legal and Economic Research Journal, Volume: 48, Faculty of Law, Mansoura University, p.168,169.

(1) Virginie Barral, (May 2012), Sustainable Development in International Law: Nature and Operation of an Evolutive Legal Norm, *European Journal of International Law*, Volume 23, Issue 2, P. 380.

(2) Anita M. Halvorssen, (January 2011), International Law and Sustainable Development - Tools for Addressing Climate Change, Denver Journal of International Law & Policy, Volume 39, Number 3 Summer,p.407.

(3) ISHIKAWA Tomoko, (September 2015), The Role of the Precautionary and Polluter Pays Principles in Assessing Compensation, Research Institute of Economy, Trade and Industry (RIETI), p.15.

primary topic of discussion. This was the first instance of polluter pays principle being discussed on an international forum. In ١٩٧٢, the Organisation for Economic Co-operation and Development formally recommended on ٢٦ May ١٩٧٢ the polluter pays principle to be the 'Guiding Principle Concerning the International Economic Aspects of Environmental Policies' (1).

It stated that the polluter should bear the expenses of carrying out the pollution prevention and control measures introduced by public authorities, to ensure that the environment is in an acceptable state. Policymakers can use this principle to curb pollution and restore the environment. By applying it, polluters are incentivised to avoid environmental damage and are held responsible for the pollution that they cause. It is also the polluter, and not the taxpayer, who covers the costs created by pollution(2).

Since ١٩٧٢, the scope of the PPP has gradually increased. The principle initially focused solely on pollution prevention and control costs but was later extended to include the costs of the measures authorities took to deal with pollutant emissions. A further extension of the principle covered environmental liability: polluters should pay for the environmental damage they caused, irrespective of whether the pollution giving rise to the damage was below legal limits (termed "allowable residual pollution") or accidental(3).

Thereafter, the European Charter on the Environment and Health, ١٩٨٩ and the Single European Act, ١٩٨٦ made provisions for applying the polluter pays principle (4).

Principle ١٦ of the Rio Declaration(5) also states the "polluter pays

(1) Siddhant Nanodkar, (2018), Polluter Pays Principle: Essential Element of Environmental Law and Policy, International Journal of Law Management & Humanities , Volume 1, Issue 5 ,p.3.

(2) European Court of Auditors, (2021), Special Report "The Polluter Pays Principle: Inconsistent application across EU environmental policies and actions, European Union ,p.6.
https://www.eca.europa.eu/Lists/ECADocuments/SR21_12/SR_polluter_pays_principle_EN.pdf

(3) Ibid., p.7.

(4) Christopher M Inwang, Op. Cit., p.133.

(5) Article 16 of RIO DECLARATION ON ENVIRONMENT AND DEVELOPMENT 1992 stated that "National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments,

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principle", although it is not expressed in mandatory terms(1).

The United Nations Environment Programme (UNEP) Drafted Guidelines for the Development of National Legislation on Liability, Response Action and Compensation for Damage Caused by Activities Dangerous to the Environment states: "[t]he objective of these Guidelines is to provide an effective regime on liability, redress and compensation for damage caused by activities dangerous to the environment, taking into account, particularly, the polluter pays principle",(2) the ١٩٩٢ Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area mandates the application of the Polluter-Pays-Principle: Article ٣ (para.٤) makes the parties responsible for producing pollution responsible for paying for the damage done to the environment and the ١٩٩٢ Convention for Protection of the Marine Environment of the North-East Atlantic (Paris Convention, ١٩٩٢). Article ٢b says: "[t]he contracting parties shall apply…the polluter pays principle, by virtue of which the costs of pollution prevention, control and reduction measures are to be borne by the polluter". Other agreements, such as the North American Free Trade Association (NAFTA), Rio Agenda ٢١, the ٢٠٠٢ World Summit on Sustainable Development (WSSD) Implementation Plan, the Convention of the Protection of the Alps, and the Protocol on Water and Health also endorsed the Polluter Pays Principle (3).

٨-The principle of Climate Justice

The concept of environmental justice serves as a fundamental value of environmental law. It embodies the principle of justice that governs the relationships between individuals and between humanity and nature, emphasizing freedom and equality. This concept of freedom and equality concerns not only to the environmental rights and interests of present generation but also to those of future generations.(4)

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taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment"

(1) ISHIKAWA Tomoko, Op. Cit., pp.15,16.

(2) Ibid., p.16.

(3) Mizan R. Khan, (September 2015), Polluter-Pays-Principle: The Cardinal Instrument for Addressing Climate Change, Laws 4, No. 3 "an Open Access Journal by MDPI", ,p.642. https://doi.org/10.3390/laws4030638

(4) Guomin Ding , Guichang Liu , Yunxiang Chen, (2020), A study on the

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Environmental justice advocates for a fair distribution of rights and interests both within a country and among countries, and determines the guidelines for the division of environmental interests and the appropriate proportion of environmental burden. A society in which environmental benefits and burdens are unequally distributed is clearly an unjust society. Country as the most basic member of the international community and the most basic subject of international law, it is necessary for countries to bear national environmental responsibility [1].

There are three criteria for climate justice are commonly presented in various combinations: historical responsibility, benefit, and ability to pay. All of these are problematic to varying degrees because justice is complicated, but they provide a coherent basis for giving effect to the principle of common but differentiated responsibility and respective capabilities (CBDR-RC), which has been the most contentious and divisive issue in the UNFCCC because attributing responsibility for climate breakdown and the national obligations that flow from it, lies at the heart of climate justice, a basic tenet of justice that those who harm others have a duty to correct or repair the harm – to the extent that this is possible under global heating [2].

In conclusion, this section highlights that the legal principles governing international responsibility for climate change constitute a vital foundation for enhancing environmental protection. These principles reflect the international community's commitment to addressing environmental challenges and provide an effective legal framework to mitigate damages resulting from human activities. By embracing the No-Harm Principle and principles of climate justice, a balance can be achieved between sustainable development and environmental protection, ensuring future generation’s rights to a healthy and safe environment.

Theory of Climate Justice in International Environmental Law, Scholars International Journal of Law, Crime and Justice, p.8.
https://saudijournals.com/media/articles/SIJLCJ_31_8-12.pdf

(1) Ibid.

(2) Sam Adelman, (2021), “A legal paradigm shift towards climate justice in the Anthropocene”, Oñati Socio-Legal Series, Volume 11, (NO.1), p.48.
https://opo.iisj.net/index.php/osls/article/view/1235

Section Three
State's Responsibility and International Liability regarding Transboundary Environmental Damages of climate change to marine environment.

Liability, in the legal sense, is the obligation of a legal entity, such as a natural person, company or State, to provide compensation for damage caused by an action for which that legal entity is responsible(1). Responsibility is a cardinal concept of law; more precisely, it is inseparable from the modern conceptions of a legal order and legal norms. In other words, responsibility means responding to the breach of legal obligations. The term 'responding' connotes the idea that there are legal consequences flowing from such breach. In turn, the concept of responsibility thus reflects the binding nature of the legal obligation (2).

The concepts of "state responsibility" and "international liability" are distinct yet related principles within the realm of public international law. "**State responsibility** refers to a State's responsibility under international law in general, whereas; **international liability** denotes a State's civil responsibility, or obligation to pay compensation or make reparations for injuries that non-nationals suffer outside its national boundaries as a result of activities within its territory or under its control"(3) A State's international liability is engaged not only under

(1) Peter Gailhofer, et al., (2023), Functions and Objectives of Corporate Liability for Transboundary Environmental Harm. In: Peter Gailhofer, David Krebs, Alexander Proelss, , Kirsten Schmalenbach, Roda Verheyen, (Editors), Corporate Liability for Transboundary Environmental Harm, Springer, Cham. ,p.22.

(2) Robert Kolb, (28 April 2017), The International Law of State Responsibility, Edward Elgar Publishing Limited, p.1. https://www.elgaronline.com/monochap/9781786434708/08_chapter1.xhtml?tab_body=pdf-copy1

(3) Sompong Sucharitkul, (1996), State Responsibility and International Liability under International Law, Loyola of Los Angeles International and Comparative Law Review ,Volume 18. Number 4 Symposium on Blinding Laser Weapons Article 6, p.822.
https://digitalcommons.lmu.edu/ilr/vol18/iss4/6

International Liability arises when there is a breach of an international obligation. It is founded on a new legal relationship between the entity

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international law, but also be existing within the domestic legal systems of states involved in transnational relations(1).

So understanding the nuances between these two concepts is crucial for navigating the complex landscape of state accountability in an increasingly globalized world.

So the accountability of the subjects of international law for their acts and omissions, and the consequences thereof, is fundamental to the effectiveness and legitimacy of international law (2).

It is worth noting that both the duty to make financial compensations because of a breach of international environmental rules and the duty to compensate because of the occurrence of transboundary environmental damage can be referred to as environmental liability (3).

International instruments have emphasized the importance of this international liability, particularly in the context of environmental pollution. Principle ٢٢ of the ١٩٧٢ Stockholm Declaration called for states to cooperate in developing international law around liability and compensation for victims of pollution and environmental damage that crosses jurisdictional boundaries (4).

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that breached or failed to fulfill its obligation and the entity against which the breach occurred. The creation of this new relationship results in the entity that committed the breach being obligated to remedy the consequences of its actions. Furthermore, the entity affected by the breach has the right to seek compensation; **See;**. Prof. Hamed Sultan. (1982) Public International Law in Times of Peace, National Publishing, 2nd Edition, p. 117.& Prof. Dr. Muhammad Hafez Ghanem provides an alternative definition, stating that **International Responsibility** is incurred by a state or any entities recognized under international law when such a party engages in actions that necessitate accountability according to the legal principles and norms prevailing in the international community; Mohamed Hafez Ghanem. (1969) International Responsibility, No publisher,1st ed., pp. 14-15.

(1) Sompong Sucharitkul, Op. Cit, p.822.

(2) Christina Voigt, (23 February 2021), International Environmental Responsibility and Liability, p.1.
https://ssrn.com/abstract=3791419and; http://dx.doi.org/10.2139/ssrn.3791419

(3) Peter Gailhofer, Op. Cit., p.45.

(4) See: Principle (2) Of Stockholm Declaration 1972, Which Stipulated That "States Shall Co-Operate To Develop Further The International Law Regarding Liability And Compensation For The Victims Of Pollution And Other Environmental Damage Caused By Activities Within The Jurisdiction Or Control Of Such States To Areas Beyond Their Jurisdiction".

So, the International Law Commission (ILC) worked to codify and develop rules of environmental responsibility, international liability. It has prepared Comprehensive drafts and projects on liability [1].

For these purpose, we divided State's Responsibility into two types:

iv. Responsibility of states for Internationally Wrongful Acts **"Classical Responsibility"**

v. Responsibility of states of Transboundary Harm from Hazardous Activities **"Objective Responsibility"**

i. Responsibility of states for Internationally Wrongful Acts "Classical Responsibility"

The inception of the defining of the **concept of responsibility** of state is in ١٩٢٨ when the Permanent Court for International Justice, in the Chorzov case (Germany v. Poland) points out that "as principle of the international law, the breach of each legal obligation means responsibility for repairment of the damage"[2].

State's responsibility was one of the first fourteen areas, originally chosen by the ILC for the 'codification and progressive development.' The preparation of current acts regarding this matter has lasted for decades, resulting in several documents, out of which the key one is the Resolution ٥٦/٨٣ for International Responsibility of States for Internationally Wrongful Acts [3].

The International Law Commission's Resolution ٥٦/٨٣ on International State's Responsibility for Internationally Wrongful Acts sets out that "[e]very internationally wrongful act of a state entails the international responsibility of that state."[4] Furthermore, Article ٢ of the resolution sets out the "Elements of an Internationally Wrongful Act of a State" as follows: "There is an internationally wrongful act of

(1) see: International Law Commission (ILC), Prevention of Transboundary Harm from Hazardous Activities 2001, General Assembly, Fifty-sixth Session, Supplement No. 10 (A/56/10).
https://legal.un.org/ilc/texts/instruments/english/draft_articles/9_7_2001.pdf

(2) Milka Dimitrovska, (2015), The Concept Of International Responsibility Of State In The International Public Law System , Journal of Liberty and International Affairs, Vol. 1, No. 2, p.2

(3) Ibid., p.3

(4) Christina Voigt, Op. Cit., p.5.

a State when conduct consisting of an action or omission: (a) is attributable to the State under international law; and (b) constitutes a breach of an international obligation of the State"[1]. So the main elements of an Internationally Wrongful Act of a State to be legally responsible are:

A. <u>The action is attributable to a State under international law.</u>

A State will generally only be liable for the official conduct of its agencies or officials. As well, State conduct may include "positive acts, omissions, failure to meet a standard of due care, or diligent control or pure lack of vigilance that is lawful according to the national law of the State"[2].

B. <u>The action should constitute a breach of an international obligation of the State.</u>

State responsibility refers to the accountability of a state for a violation of international law resulting from the commission of an internationally wrongful act. This occurs when a state breaches an international legal obligation (referred to as "primary law"), which may be established by treaty law (e.g., bilateral or multilateral environmental agreements) or by a customary norm of international law (such as the prohibition of environmental harm)[3].

The consequences of international responsibility for a wrongful act include the obligation of the wrong-doer to cease that act, to offer assurances of non-repetition, and to make full reparation for the injury caused[4].

This reparation encompasses compensation for environmental damage and can take the form of: ١) restitution, ٢) compensation, ٣) satisfaction, either individually or in combination. Although it may be physically impossible to restore the situation ex ante, the Court has

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(1) See: Article 2 of International Law Commission, Draft Articles on Responsibility of States for Internationally Wrongful Acts, November 2001, (A/56/10)

(2) Gonzalo Sánchez de Tagle, (June 2015), The Objective International Responsibility of States in the Inter-American Human Rights System, Mexican Law Review ,Vol. VII, No. 2.

(3) Christina Voigt, Op. cit., p.1.

(4) Ibid.

emphasized that "whether there is a sufficiently direct and certain causal nexus between the wrongful act … and the injury suffered by the Applicant" (1).

For this purpose, accountability is used as an "umbrella term" and refers both to the responsibility of states for internationally wrongful acts, as well as to their liability to make reparation for harm and damages resulting from their activities (2).

Moreover, the Permanent Court of International Law (PCIL) decided in the Chorzow Factory Case of ١٩٢٧ that's, in international law, states are responsible for violations of public international law and are obliged to compensate the indirectly or directly affected states for the damage caused (3).

The obligation to make reparation for damage resulting from violation of international law norms is considered one of the fundamental principles of this law. According to the classic formula adopted by the Permanent Court of International Justice in the Chorzow case (Germany V. Poland), it means the obligation to restore the state before the damage occurred. As an attempt at a comprehensive formulation of the principles of state responsibility in international law, the Articles on the Liability of States for Acts contrary to international law stated in Article ٣١, paragraph ١ of the "Responsibility of States for Internationally Wrongful Acts, ٢٠٠١" that there is a need to fully reparation of the damage. The term "damage" is understood broadly, encompassing both material and moral dimensions. A similarly broad interpretation has been adopted by the International Law Commission regarding the concept of reparation, which can encompass restitution as well as compensation, rehabilitation and even guarantees of non-repetition of violations(4).

This theory of Internationally Wrongful Acts of States set out in ILC Resolution ٥٦/٨٣ has been subjected to criticism from jurists. The reason for this criticism is the technological development that has enabled states to take precautions to the fullest extent. However, harm

(1) Sandrine Maljean-Dubois, Op. Cit., p.6.
(2) Christina Voigt, Op. Cit.,p.1
(3) Richard S.J. Tol, Roda Verheyend, (2004), State responsibility and compensation for climate change damages—a legal and economic assessment, Energy Policy 32, p.1111.
(4) Maciej Nyka, Op. Cit., P.134.

can still occur to another state even though the responsible state has not committed any wrongful act in a known technical sense. In other words, the current framework does not adequately address situations where a state causes harm to another despite taking all reasonable precautions.

ii. Responsibility of states of Transboundary Harm from Hazardous Activities

"Objective Responsibility"

In fact, it is not necessary for the state to commit a wrongful act that constitutes a breach of an international obligation to be held responsible. In some cases, despite the state taking due care and not committing any wrongful act, it can still be held responsible.

So, we will be discussing the situations where a state can be held responsible for harm caused to another state, even without having committed a technically wrongful act.

Initiatives by the International Law Commission "In Hazardous Responsibility":

In ١٩٧٣: Upon the recommendation of the General Assembly, the International Law Commission (ILC) undertook to undertake at an appropriate time a separate study of the topic "International liability for injurious consequences arising out of the performance of other activities", other than acts giving rise to responsibility for internationally wrongful acts(1).

In ١٩٧٨: The topic 'International Liability for Injurious Consequences Arising from Acts Not Prohibited by International Law' was included in the Commission's program of work"(2).

In ١٩٩٧: In fact, the Commission decided to deal first with prevention aspects of the topic under the subtitle "Prevention of transboundary damage from hazardous activities"(3).

In ٢٠٠١: The Commission (ILC) completes its work by preparing Comprehensive drafts on liability for hazardous activities and submitted it to the General Assembly Fifty-sixth Session under title

(1) General Assembly of the United Nations, Sixth Committee (Legal) — 71st session, https://www.un.org/en/ga/sixth/71/prevention_of_harm.shtml

(2)Ibid.

(3) Ibid.

"Prevention of Transboundary Harm from Hazardous Activities" which states in Article (١) that "The present articles apply to activities not prohibited by international law which involve a risk of causing significant transboundary harm through their physical consequences";[(1)].

In ٢٠٠٢: The Commission resumed its work on the second part of the topic, which bore the subtitle "International liability in case of loss from transboundary harm arising out of hazardous activities" [(2)].

In ٢٠٠٦: The Commission completed the liability aspects by adopting draft principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities. It recommended to the Assembly that it endorse the draft principles by a resolution and urge States to take national and international action to implement them[(3)].

Actually; it was adopted by the General Assembly at its fifty-eighth session under title "International Liability for Injurious Consequences Arising out Of Acts Not Prohibited by International Law"[(4)].

Article ١ of the United Nations Convention on the Law of the Sea (١٩٨٢), clarifies the meaning of liability for hazardous activities by defining "pollution of the marine environment" as "the introduction by man... of substances or energy into the marine environment… which results or is likely to result in such deleterious effects…". This definition indicates that the element of hazardous serves as a basis for liability [(5)].

Here, liability is based on the occurrence of damage without fault.

In conclusion, the ILC's initiatives on "International Liability for

(1) see: International Law Commission (ILC), Prevention of Transboundary Harm from Hazardous Activities 2001, Op. Cit.

(2)- General Assembly of the United Nations, Op. Cit.

(3)- Ibid.

(4) INTERNATIONAL LAW COMMISSION (ILC), (2006), International Liability For Injurious Consequences Arising Out Of Acts Not Prohibited By International Law (International Liability In Case Of Loss From Transboundary Harm Arising Out Of Hazardous Activities) , Fifty-eighth session https://documents.un.org/doc/undoc/ltd/g06/616/54/pdf/g0661654.pdf?token=rlw5OJbyQwpYr7GKqI&fe=true

(5) See: Article 1 "Use of terms and scope" (para.1) / no. (4) of the United Nations Convention on the Law of the Sea (1982).

Injurious Consequences of Hazardous Activities" represent a significant advancement in the legal framework governing transboundary harm. Beginning in ١٩٧٣ and evolving through subsequent decades, the ILC has emphasized the importance of preventive measures and established comprehensive principles aimed at addressing the injurious consequences associated with hazardous activities. The adoption of loss allocation principles in ٢٠٠٦ highlights the critical notion that damage can incur liability without the necessity of proving fault, thereby reinforcing the legal foundations for environmental protection and international cooperation.

Legal Challenges in Protecting Coastal Communities: The Torres Strait Islanders Case

As climate change increasingly threatens marine environments, particularly for Small Island Developing States (SIDS), new legal challenges arise regarding states responsibility to protect coastal communities. A significant case illustrating these challenges is Torres Strait Islanders v. Australia, where Indigenous Islanders assert their rights to life and culture in the face of rising sea levels and storm surges. This case exemplifies the critical role of international law in safeguarding the marine environment and the rights of coastal states against climate-related damages.

Case Study: Loss and Damage to Small Island Developing States (SIDS)

Torres Strait Islanders VS Australia

Jurisdictions: United Nations Human Rights Committee

In a world-first initiative, a group of Torres Strait Islanders whose homes are threatened by rising sea levels have filed a human rights complaint with the United Nations Human Rights Committee against the Australian government for its failure and inaction to address climate change [1].

The Islanders claimed that changes in weather patterns have direct

(1) Climate threatened Torres Strait Islanders bring human rights claim against Australia | ClientEarth

harmful consequences on their livelihood, their culture and traditional way of life(1).

The Islanders claimed that their rights have been violated because Australia has failed to adapt to climate change by upgrading sea walls on the islands and reducing greenhouse gas emissions, among other necessary measures(2).

The plaintiffs inhabit in a group of islands off the northern tip of Queensland, Australia, between the Australian mainland and Papua New Guinea. These low-lying island communities are highly vulnerable to climate change impacts including rising sea levels, storm surge, coral bleaching, and ocean acidificatio(3).

The petition also alleges that Australia is violating the plaintiffs' fundamental human rights under the International Covenant on Civil and Political Rights (ICCPR) due to the government's failure to address climate change (4).

Advancing seas are already threatening homes, as well as damaging burial grounds and sacred cultural sites. Many islanders are worried that their islands could quite literally disappear in their lifetimes without urgent action (5).

Additionally, the islanders argued that climate changes have triggered a heavy rainfall and storms, degrading land and trees. This, in turn, has reduced the amount of food available from traditional fishing and farming(6).

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(1)https://climatecasechart.com/non-us-case/petition-of-torres-strait-islanders-to-the-united-nations-human-rights-committee-alleging-violations-stemming-from-australias-inaction-on-climate-change/#:~:text=On%20September%2023%2C%202022%2C%20the,private%20life%2C%20family%20and%20home.

(2) https://news.un.org/en/story/2022/09/1127761

(3)https://climatecasechart.com/non-us-case/petition-of-torres-strait-islanders-to-the-united-nations-human-rights-committee-alleging-violations-stemming-from-australias-inaction-on-climate-change/#:~:text=On%20September%2023%2C%202022%2C%20the,private%20life%2C%20family%20and%20home.

(4)https://climatecasechart.com/non-us-case/petition-of-torres-strait-islanders-to-the-united-nations-human-rights-committee-alleging-violations-stemming-from-australias-inaction-on-climate-change/#:~:text=On%20September%2023%2C%202022%2C%20the,private%20life%2C%20family%20and%20home.

(5) Climate threatened Torres Strait Islanders bring human rights claim against Australia | ClientEarth

(6) https://news.un.org/en/story/2022/09/1127761

On August ١٣, ٢٠٢٠, Australia requested the Committee to dismiss the petition. However, On September ٢٣, ٢٠٢٢, the United Nations Human Rights Committee found that Australia's failure to provide adequate protection for the indigenous Torres Islanders against adverse impacts of climate change violated their rights to enjoy their culture and be free from arbitrary interferences with their private life, family and home. The Committee indicated that despite Australia's series of actions, such as the construction of new seawalls on the four islands that are expected to be completed by ٢٠٢٣, additional appropriate and timely measures were required to avert a risk to the Islanders' lives, since without robust national and international efforts, the impacts of climate change may expose individuals to a violation of their right to life under the Covenant. As remedies, the Committee asked Australia to compensate the indigenous Islanders for the harm suffered, engage in meaningful consultations with their communities to assess their needs, and take the necessary measures to ensure the safe existence of their communities on their islands(1).

Ultimately, the case of Torres Strait Islanders v. Australia underscores the urgent need for enhance legal frameworks that protect the rights of coastal communities facing the adverse effects of climate change. The United Nations Human Rights Committee found that Australia's failure to adequately address climate change and in protect the Torres Strait Islanders' rights constituted a violation of their fundamental human rights. This landmark decision highlights the intersection of environmental law and human rights, emphasizing the responsibility of states to take proactive measures to safeguard vulnerable populations from climate-related harms.

(1)https://climatecasechart.com/non-us-case/petition-of-torres-strait-islanders-to-the-united-nations-human-rights-committee-alleging-violations-stemming-from-australias-inaction-on-climate-change/#:~:text=On%20September%2023%2C%202022%2C%20the,private%20life%2C%20family%20and%20home.

Conclusion

The research on “The Role of International Law in Protecting the Marine Environment against Climate Change” has led to several conclusions and recommendations as follows:

١. **Increasing Impacts of Climate Change**: The research confirms that climate change has increasingly negative effects on the marine environment, threatening biodiversity and the sustainability of marine resources.

٢. **Inadequacy of Current Legal Frameworks**: The study reveals that existing international legal frameworks do not adequately reflect the emerging challenges associated with climate change.

٣. **International Responsibility for Damages**: There is a lack of international accountability mechanisms for countries responsible for greenhouse gas emissions, leading to inequitable burden distribution and necessitating additional commitments from developed countries.

٤. **International Cooperation**: The research shows that effective international cooperation is essential for addressing the impacts of climate change on the marine environment.

٥. **Recognition of Marine Issues**: The inclusion of ocean-related considerations in the preamble of the Paris Agreement marks significant progress in recognizing the role of marine environments in climate negotiations, leading to more targeted actions.

٦. **Importance of Legal Principles**: The study highlights the significance of legal principles such as the "precautionary principle" and the "No-Harm Principle" in enhancing marine environmental protection.

٧. **Need for Adaptive Strategies**: Current frameworks emphasize the necessity of adaptive measures, such as establishing marine protected areas, to enhance the resilience of marine ecosystems against climate change impacts.

٨. **Focus on Intergenerational Equity**: The recognition of intergenerational equity highlights the responsibility of current generations to preserve the marine environment for future generations. This principle should guide policy-making and legal frameworks to ensure sustainable use of marine resources.

٩. **Enhancing Environmental Impact Assessments**: Emphasizing environmental impact assessments as a requirement under international law highlights their importance

in assessing potential environmental impacts prior to project approval. This practice should be standardized across jurisdictions to ensure comprehensive environmental protection.

١٠. **Fundamental Nature of Accountability**: The concepts of state's responsibility and international liability form the foundation of the legitimacy of international law. They ensure that states are held accountable for their actions or omissions, particularly in the context of environmental damage.

١١. **Enhancing Environmental Awareness**: This is an important and vital matter, as Raising awareness about the impacts of human activities, such as the use of land for overgrazing, deforestation, climate change and the impact of industry in exacerbating climate change impacts on the marine environment, which requires improving environmental practices.

١٢. **Recognition of Environmental Responsibility**: The growing recognition of environmental responsibility emphasizes the need for states to compensate for transboundary environmental damage, which enhances the necessity for international cooperation in addressing pollution and environmental degradation.

Recommendations

١. **Amend International Agreements**: Existing international instruments should be reviewed and amended to include clear provisions related to climate change and its impacts on the marine environment.

٢. **Enhance Accountability Mechanisms**: Establish international mechanisms to hold countries and corporations accountable for greenhouse gas emissions and their effects on the marine environment.

٣. **Activate International Cooperation and Monitoring**: Promote cooperation between developed and developing countries to exchange knowledge and resources necessary to address climate change impacts and improve the implementation of agreements related to marine environmental protection.

٤. **Enhance Education and Research**: Develop educational and research programs to enhance understanding of climate change and its effects on the marine environment.

٥. **Develop National Strategies**: Countries should develop

comprehensive national strategies to protect the marine environment from the impacts of climate change and encourage the implementation of sustainable development policies that support renewable energy sources.

٦. **Establish an International Climate Court**: It is recommended to establish a specialized international court for climate issues to enhance the capacity to address complaints and cases related to environmental damages caused by climate change and to effectively enforce laws.

٧. **Develop Compensation Mechanisms**: Effective international compensation mechanisms should be developed to ensure that affected countries are compensated for damages resulting from climate change, with a focus on supporting the most vulnerable nations.

References

- Alan Boyle, (March ٢٠١١), Developments in the International Law of Environmental Impact Assessments and their Relation to the Espoo Convention. Review of European Community & International Environmental Law (RECIEL).
- Anastasia Chatzimentor, Aggeliki Doxa, Stelios Katsanevakis, Antonios D. Mazaris (٢٠٢٣). Are mediterranean marine threatened species at high risk by climate change?. Global Change Biology, volume (٢٩), issue (٧).
- Anita M. Halvorssen, (January ٢٠١١), International Law and Sustainable Development - Tools for Addressing Climate Change, Denver Journal of International Law & Policy, Volume ٣٩ , Number ٣ Summer.
- Bobbi-Jo Dobush, Natalya D. Gallo, Melania Guerra, Bleuenn Guilloux, Elisabeth Holland, Sarah Seabrook & Lisa A. Levin, (٢٠٢٢), A new way forward for ocean-climate policy as reflected in the UNFCCC Ocean and Climate Change Dialogue submissions, Climate Policy, VOL. ٢٢, NO. ٢.
- Bleuenn Guilloux, Romain Schumm, (November ٢٠١٦), "Which International Law for Ocean and Climate?", ocean-climate.org; https://www.ocean-climate.org/wp-content/uploads/٢٠١٧/٠٣/international-law-١٦١٠٢٤_ScientificNotes_Oct٢٠١٦_BD_ppp-١٤.pdf.
- Brown Weiss, (٢٠٠٨), Climate Change, Intergenerational Equity, and International Law, Vermont Journal of Environmental Law, Volume ٩.
- CBD. First draft of the post-٢٠٢٠ global biodiversity framework, ٣rd meeting online ٢٣ August-٣ September ٢٠٢١; cbd.int/doc/c/abb٥/٥٩١f/٢e٤٦٠٩٦d٣f٠٣٣٠b٠٨ce٨٧a٤٥/wg٢٠٢٠-٠٣-٠٣-en.pdf.
- Christina Voigt, (٢٣ February ٢٠٢١), International Environmental Responsibility and Liability; https://ssrn.com/abstract=٣٧٩١٤١٩ ; http://dx.doi.org/١٠,٢١٣٩/ssrn.٣٧٩١٤١٩
- Christina Voigt, (July ٢٠٢٣), The power of the Paris Agreement in international climate litigation. Review of European, Comparative & International Environmental Law "RECIEL", Volume٣٢, Issue٢, Special Issue: International Climate Litigation.
- Chris Armstrong , (August ٢٠٢٣)The United Nations

Convention on the Law of the Sea, global justice and the environment , Global Constitutionalism, Cambridge University Press, Volume ١٣ , Issue ١.

- Christopher M Inwang,(٢٠٢١), Polluter pays principle; A jus cogen or customary international law, International Journal of Law, Volume ٧, Issue ١.
- Doreen Stabinsky, Juan P. Hoffmaister,(٢٠١٥) Establishing institutional arrangements on loss and damage under the UNFCCC: the Warsaw International Mechanism for Loss and Damage, in, International Journal of Global Warming, Volume ٨, Issue ٢.
- Didier Bourguignon. (December ٢٠١٥), The precautionary principle: Definitions, applications and governance" In-Depth Analysis", European Parliamentary Research Service.
- European Court of Auditors, (٢٠٢١), Special Report "The Polluter Pays Principle: Inconsistent application across EU environmental policies and actions, European Union.
- General Assembly of the United Nations, Sixth Committee (Legal) — ٧١st session, https://www.un.org/en/ga/sixth/٧١/prevention_of_harm.shtml
- Gonzalo Sánchez de Tagle, (June ٢٠١٥), The Objective International Responsibility of States in the Inter-American Human Rights System, MEXICAN LAW REVIEW ,Vol. VII, No. ٢.
- Guomin Ding, Guichang Liu, Yunxiang Chen, (٢٠٢٠), A study on the Theory of Climate Justice in International Environmental Law, Scholars International Journal of Law, Crime and Justice.
- Prof. Dr. Hamed Sultan. (١٩٨٢) Public International Law in Times of Peace, National Publishing, Second Edition.
- Hoegh-Guldberg. O., et al. (September ٢٠١٩), “The Ocean as a Solution to Climate Change: Five Opportunities for Action”, Report by the High-Level Panel for a Sustainable Ocean Economy, World Resources institute, Washington.
- Isabella Lövin, (May ٢٠١٧) Climate Change Poses a Threat to Our Oceans, Nos. ١&٢, Volume LIV “Our Ocean, Our World”.
- Ishikawa Tomoko, (September ٢٠١٥), The Role of the Precautionary and Polluter Pays Principles in Assessing Compensation, Research Institute of Economy, Trade and Industry(RIETI).
- International Court of Justice, SEPARATE OPINION OF

JUDGE DONOGHUE Obligation under customary international law to exercise due diligence in preventing significant transboundary environmental harm — Environmental Impact Assessment — Notification — Consultation;https://www.icj-cij.org/public/files/case-related/١٥٠/١٥٠-٢٠١٥١٢١٦-JUD-٠١-٠٥-EN.pdf

- International Court of Justice,(٨ July ١٩٩٦) Summaries of Judgments, Advisory Opinions and Orders of the International Court of Justice about LEGALITY OF THE THREAT OR IJSE OF NUCLEAR WEAPONS Advisory Opinion
- International Law Commission, (٢٠٠١), Draft Articles on Responsibility of States for Internationally Wrongful Acts, (A/٥٦/١٠).
- International Law Commission (ILC), (٢٠٠١), Prevention of Transboundary Harm from Hazardous Activities, General Assembly, Fifty-sixth Session, Supplement No. ١٠ (A/٥٦/١٠)
- International Law Commission (ILC), (٢٠٠٦), International Liability For Injurious Consequences Arising Out Of Acts Not Prohibited By International Law (International Liability In Case Of Loss From Transboundary Harm Arising Out Of Hazardous Activities), Fifty-eighth session, A/CN.٤/L.٦٨٦
- Intergovernmental Oceanographic Commission. (٢٠٢١), The United Nations Decade of Ocean Science for Sustainable Development (٢٠٢١-٢٠٣٠): Implementation Plan, summary, UNESCO.
- Jingyi Ding, Samantha K. Travers, Manuel Delgado-Baquerizo, David J. Eldridge, (February ٢٠٢٠), Multiple trade-offs regulate the effects of woody plant removal on biodiversity and ecosystem functions in global rangelands, Global Change Biology, Volume ٢٦, Issue ٢.
- Jericho Trio, (September ٢٠٢٣), The Road to Kyoto: A multiple logistic regression analysis on predicting North American commitments to the Kyoto Protocol, Research Gate.
- Jesús Francisco Ramírez Bañuelos, (١٦ September ٢٠٢١), Climate change in international, Revista Electrónica de Derecho Internacional Contemporáneo, Universidad Nacional de La Plata, Argentina, vol. ٤, No. ٤. http://portal.amelica.org/ameli/journal/٢٨٣/٢٨٣٢٣٤٥٠٠٤/html/
- Klerk, B. (٢٠٢٢). Protecting the marine environment from the impacts of climate change: a regime interaction study. Review of European Comparative & International Environmental Law,

Volume٣٢, Issue١.

- Laura Schäfer, Sönke Kreft, (٢٠١٤). Loss and damage: roadmap to relevance for the Warsaw International Mechanism. German Watch.
- Lynda M. Collins. (٢٠٠٧), Revisiting the Doctrine of Intergenerational Equity in Global Environmental Governance, Dalhousie Law Journal, Volume٣٠, Issue ١.
- Mai Fujii, (May ٢٠٢٠), The Ocean in the United Nations Framework Convention on Climate Change , Ocean Policy Research Institute of the Sasakawa Peace Foundation; https://www.spf.org/opri/en/global-data/opri/perspectives/prsp_٠٠٩_٢٠٢٠_fujii_en.pdf
- Mara Tignino, Christian Bréthaut, (٦ October ٢٠٢٠), The role of international case law in implementing the obligation not to cause significant harm, International Environmental Agreements: Politics, Law and Economics.
- Maciej Nyka, (June ٢٠٢١), State Responsibility for Climate Change Damages, Review of European and Comparative Law, Volume XLV, Issue (٢).
- Marcia Creary, (April ٢٠١٣) Impacts of Climate Change on Coral Reefs and the Marine Environment, No. ١ Vol. L, Water.
- Mastrorillo, M., & Béné, C. (٢٠١٩). The role of international cooperation in marine conservation: Lessons from the Paris Agreement. Ocean & Coastal Management, Vol. ١٧٤.
- Milka Dimitrovska, (٢٠١٥), The Concept of International Responsibility of State in the International Public Law System, Journal of Liberty and International Affairs, Vol. ١, No. ٢.
- Mizan R. Khan, (September ٢٠١٥), Polluter-Pays-Principle: The Cardinal Instrument for Addressing Climate Change, Laws ٤, No.٣.
- Prof. Dr. Mohamed Adel Askar, (October ٢٠١٠), International Climate Protection: a study within the framework of international agreement law, Legal and Economic Research Journal, VOLUME ٤٨, Faculty of Law, Mansoura University.
- Prof. Dr. Mohamed Hafez Ghanem. (١٩٦٩) International Responsibility, No publisher, ١st ed.
- Muye Xu, (October ٢٠٢٣), Integrating Climate Change into the Law of the Sea Convention: An Examination of Feasibility, Lecture Notes in Education Psychology and Public Media, Volume ٢٠.
- Naswar, Maskun, Nurul Habaib Al Mukarramah, Josse

Charmario Wara Angi, Valeria Erika Sari Paliling, (٢٠٢٣), Legal protection for environment and coastal community from marine ecosystem degradation and climate change impact. Journal of Law and Sustainable Development, volume ١١, no.(٩).

- Peter Gailhofer, et al., (٢٠٢٣), Functions and Objectives of Corporate Liability for Transboundary Environmental Harm. In: Peter Gailhofer, David Krebs, Alexander Proelss, , Kirsten Schmalenbach, , Roda Verheyen, (Editors), Corporate Liability for Transboundary Environmental Harm. Springer.
- Poloczanska, E., et al. (٢٠١٩), The Ocean and Cryosphere in a Changing Climate: A Special Report of the intergovernmental panel in climate changing, (IPCC).
- R.M. Venegas, J. Acevedo, E.A. Treml, (August ٢٠٢٣), Three decades of ocean warming impacts on marine ecosystems: A review and perspective, Deep-Sea Research Part II.
- Richard S.J. Tol, Roda Verheyend, (٢٠٠٤), State responsibility and compensation for climate change damages—a legal and economic assessment, Energy Policy ٣٢.
- Robert Kolb, (٢٨ April ٢٠١٧), The International Law of State Responsibility, Edward Elgar Publishing Limited.
- Sam Adelman, (٢٠٢١) "A legal paradigm shift towards climate justice in the Anthropocene", Oñati Socio-Legal Series, Volume ١١, (NO.١).
- Scott C. Doney, et al. (January ٢٠١٢). Climate Change Impacts on Marine Ecosystems. Annual Review of Marine Science, Vol.٤.
- Shivam Kumar Pandey, Marapaka Pavithra, (August-٢٠٢٣), United Nations Convention on the Law of the Sea at ٤٠: Need to Revisit, Journal of Research & Development, Volume-١٥ Issue-١٦.
- Siddhant Nanodkar, (٢٠١٨), Polluter Pays Principle: Essential Element of Environmental Law and Policy, International Journal of Law Management & Humanities, Volume ١, Issue ٥.
- Sompong Sucharitkul, (١٩٩٦), State Responsibility and International Liability under International Law, Loyola of Los Angeles International and Comparative Law Review, Volume ١٨. Number ٤ Symposium on Blinding Laser Weapons Article ٦.
- Steve Lorteau. (July ٢٠٢٣), The potential of international 'State-as-polluter' litigation, RECIEL (Review of European, Comparative & International Environmental Law), Volume٣٢,

Issue٢, "Special Issue: International Climate Litigation".

- Sandrine Maljean-Dubois. (٢٠٢١), The No-Harm Principle as the Foundation of International Climate Law. Debating Climate Law.
- T. Samraj, (February ٢٠٢٤), International Initiatives on Climate Change: Contributions of United Nations Organisations on Protecting The Nature, Shanlax International Journal of Arts, Science and Humanities, Volume: ١١, Special Issue: ٢.
- U. Rashid Sumaila, Travis C. Tai, Vicky W. Y. Lam, William W. L. Cheung, Megan Bailey, Andrés M. Cisneros-Montemayor, Oai Li Chen, Sumeet S. Gulati, (٢٠١٩). Benefits of the Paris agreement to ocean life, economies, and people. Science Advances, Vol. ٥, Issue ٢.
- Vicky W. Y. Lam, William W. L. Cheung, Gabriel Reygondeau, U. Rashid Sumaila (٢٠١٦). Projected change in global fisheries revenues under climate change. Scientific Reports, Volume ٦(١).
- Virginie Barral, (May ٢٠١٢(, Sustainable Development in International Law: Nature and Operation of an Evolutive Legal Norm, European Journal of International Law, Volume ٢٣, Issue٢.
- World Commission on the Ethics of Scientific Knowledge and Technology "COMEST". (March ٢٠٠٥), The Precautionary Principle, UNESCO, France.
- William W. L. Cheung, Gabriel Reygondeau, Thomas L. Frölicher (٢٠١٦). Large benefits to marine fisheries of meeting the ١,٥°c global warming target. Science Vol. ٣٥٤, Issue ٦٣١٩.
- Yann Kerbrat, Sandrine Maljean-Dubois, (١ Nov ٢٠١٩), The Role of International Law in the Promotion of the Precautionary Principle, HAL open science.

International Treaties and Agreements Related to Environment and Oceans

- Convention on Biological Diversity (١٩٩٢).
- Helsinki Commission (Baltic Marine Environment Protection Commission).
- OSPAR (The Convention for the Protection of the Marine Environment of the North-East Atlantic).
- Paris Agreement (٢٠١٥).
- Rio Declaration on Environment and Development. (١٩٩٢).

- Stockholm Declaration on the Human Environment. (١٩٧٢).
- United Nations Framework Convention on Climate Change (UNFCCC). (١٩٩٢).
- United Nations Convention on the Law of the Sea. (١٩٨٢).

Websites

- United Nations Framework Convention on Climate Change (UNFCCC) https://www.inuitcircumpolar.com/united-nations-framework-convention-on-climate-change-unfccc/
- Report of the Conference of the Parties (COP) on its Nineteenth Session
  Report of the conference of the Parties (COP) on its nineteenth session, held in Warsaw from ١١ to ٢٣ November ٢٠١٣, https://unfccc.int/decisions?f٪٥B٠٪٥D=conference٪٣A٣٩٣٦&f٪٥B١٪٥D=session٪٣A٣٩٣٨
- Ocean Facts
  https://www.savethesea.org/STS٪٢٠ocean_facts.htm
- Information on Oceans under the UNFCCC
  https://unfccc.int/topics/ocean
- What is the United Nations Framework Convention on Climate Change?
  https://unfccc.int/process-and-meetings/what-is-the-united-nations-framework-convention-on-climate-change#:~:text=The٪٢٠١٩٨٪٢٠countries٪٢٠that٪٢٠have,ultimate٪٢٠aim٪٢٠of٪٢٠the٪٢٠UNFCCC
- United Nations Treaty on Climate Change
  https://treaties.un.org/pages/ViewDetailsIII.aspx?src=TREATY&mtdsg_no=XXVII-٧&chapter=٢٧&Temp=mtdsg٣&clang=_en&_gl=١*١١١jrch*_ga*MTExNTkyNjc٢My٤xNjgyNzE٤NTM٥*_ga_TK٩BQL٥X٧Z*MTcyMDk١OTcyMi٤٢MS٤wLjE٣MjA٥NTk٣MjIuMC٤wLjA.#١
- Marking the ٢٥th Anniversary of the Kyoto Protocol
  https://www.un.org/en/climatechange/marking-kyoto-protocol%E٢٪٨٠٪٩٩s-٢٥th-anniversary
- What Are the Aichi Biodiversity Targets?
  https://earth.org/what-are-the-aichi-biodiversity-targets/
- Torres Strait Islanders Bring Human Rights Claim Against Australia
  Climate threatened Torres Strait Islanders bring human rights claim against Australia | ClientEarth

- Groundbreaking Decision on Human Rights for Torres Strait Islanders
  https://climatecasechart.com/non-us-case/petition-of-torres-strait-islanders-to-the-united-nations-human-rights-committee-alleging-violations-stemming-from-australias-inaction-on-climate-change/#:~:text=On٪٢٠September٪٢٠٢٣٪٢C٪٢٠٢٠٢٢٪٢C٪٢٠the,private٪٢٠life٪٢C٪٢٠family٪٢٠and٪٢٠home.
- Conference of the Parties (COP) Process under the UNFCCC
  https://news.un.org/en/story/٢٠٢٢/٠٩/١١٢٧٧٦١
- UN Climate Conferences
  https://unfccc.int/process/bodies/supreme-bodies/conference-of-the-parties-cop
  https://www.un.org/en/climatechange/un-climate-conferences
- United Nations Treaty on Climate Change
  https://treaties.un.org/Pages/ViewDetailsIII.aspx?src=TREATY&mtdsg_no=XXI-٦&chapter=٢١&Temp=mtdsg٣&clang=_en