

One Ocean – a new regulatory solution to Climate Change
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An outline of Discussion Paper II in the One Ocean series.

Global heating is pushing ocean temperatures to new heights, fuelling more frequent and intense storms, rising sea levels, and the salinization of coastal lands and aquifers. Untreated sewerage and wastewater containing toxic chemicals and millions of tons of plastic waste are flooding into coastal ecosystems, killing, or injuring fish, sea turtles, seabirds, and marine mammals, and making their way into the food chain and ultimately being consumed by humans. More than 17 million metric tons of plastic entered the world's ocean in 2021, making up 85 per cent of marine litter, and projections are expected to double or triple each year by 2040, according to the latest [Sustainable Development Goals \(SDG\) report](#). According to UN estimates, by 2050, there could be [more plastic in the sea than fish](#) unless action is taken.

An innovative governance approach to ocean management is needed that builds ecosystem resilience to tackle the adverse effects of climate change and ocean acidification, and maintains and restores ecosystem integrity, including carbon cycling services. This has been recognised in a new agreement, the 2023 UN Treaty on the High Seas which “is critical to addressing the threats facing the ocean, and to the success of ocean-related goals and targets, including the [2030 Agenda](#)”. Some of the goals and targets include Sustainable Development Goal (SDG) [14](#), which aims at, among other things, preventing and significantly reducing marine pollution of all kinds by 2030, and ending overfishing through science-based management plans in order to restore fish stocks in the shortest time feasible.

This new UN Treaty will enable the establishment of area-based management tools, including marine protected areas, to conserve and sustainably manage vital habitats and species in the high seas and the international seabed area. The treaty also considers the exceptional circumstances facing small-island and landlocked developing nations. UN General Assembly President [Csaba Kőrösi](#) told the Intergovernmental Conference.

“We have a new tool. This landmark achievement (The UN Treaty on the High Seas 2023) bears witness to your collective commitment to the conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction. Together, you laid the foundation for a better stewardship of our seas, ensuring their survival for generations to come.”

However, it is unclear how this Treaty will operate and be enforced. Moreover, pollution from sewerage barely makes a mention in the Treaty nor in the 10 Ocean Decade Challenges formulated in 2021. This paper, as the second in a series, discusses how the 2023 UN Treaty on the High Seas could operate to fix such an urgent problem, proposing a new regulatory framework to address its goals, highlighting deficiencies, limitations, and problems. However, to understand the importance of the required new regulatory model a reader needs to refer to paper I which covers the links between climate and the oceans, seas and waterways, the importance of the ocean as a carbon sink, and how chemical and thermal pollution affects oceanic functions referencing current studies. Paper I also reviews methods of disposing of wastewater and sewerage and how to offset costs, as it is proposed in this paper to make grants to Less Developed Countries to fix sewage and wastewater, which should be an absolute priority of any funds connected with the UN Treaty. Paper I also concludes with a review of the past mix of national legislation which led to the development of the new 2023 UN Treaty.

The focus of this second paper is to discuss the limitations in operability and reach of the current 2023 UN Treaty on the High Seas and a propose new regulatory model. The urgency is that for the Treaty to become legally enforceable each of the 60 signatories must enact the legislation through their national parliaments. Hence it is essential to ensure that the Treaty becomes an effective tool against the destruction of our ocean and hence helps arrest climate change.

I. Background to the development of the UN Treaty started in 2021.

To strengthen momentum for ocean knowledge-based solutions, the UN Decade of Ocean Science for Sustainable Development 2021-2030 (‘Ocean Decade’) launched a strategic ambition setting process to identify a common measure of success for each of the Ocean Decade Challenges on the road to 2030. This process will produce a series of white papers to be presented at the 2024 Ocean Decade Conference in Barcelona in April 2024. Building on the solid foundation of endorsed Decade

Actions and a growing global coordination network, the Ocean Decade has reached a pivotal moment for the development of a tailored roadmap to address priority gaps and needs towards 2030.

Structured around the 10 Ocean Decade Challenges, the Vision 2030 will take stock of current trends, gaps, and priority user needs to ensure the process helps make 'the ocean we want' a reality by ensuring we have a collective and practical vision of success for each Ocean Decade Challenge."

The Vision 2030 process will be coordinated by IOC/UNESCO in its role as coordinator of the Ocean Decade and led by 10 expert Working Groups, each dedicated to one specific Challenge. These multi stakeholder groups, including representatives from Decade Actions, government, intergovernmental organizations, private sector, Indigenous and local communities, Early Career Ocean Professionals, non-governmental organizations, academia, and philanthropic foundations, will be led by two expert Co-Chairs. To set up a comprehensive and visionary strategic ambition, the members will determine user needs, priority datasets, residual gaps in science, as well as scientific knowledge, resources or infrastructure, partnerships, capacity development, technology solutions and infrastructure required for each Challenge to ensure that it can be fulfilled by the end of the Ocean Decade in 2030.

Through concrete indicators and methodologies, the Vision 2030 process will contribute to the evaluation of the impact of the Ocean Decade, identify resource mobilization priorities, and ensure the ongoing relevance of the Challenges over time. The Vision project was the culmination of a decade long project which resulted in the UN Treaty on the High Seas also known as the agreement on Biodiversity Beyond National Jurisdiction or 'BBNJ'. In February 2023 many countries joined a special project called the BBNJ High Ambition Summit in Brest with 52 parties committed to achieve successful negotiations. As of 22 February 2023 the nations included Australia, Canada, Chile, Colombia*, Comoros, Costa Rica, Egypt, Gabon, Iceland, India, Mexico, Monaco, Morocco, Namibia, New Zealand, Norway, Palau, Peru, Republic of Korea, the Republic of the Congo, Singapore, Switzerland, Togo, the United Kingdom, the United States, the EU and its 27 Member States (Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden).

The EU has played a key role in reaching the agreement, by leading the 'High Ambition Coalition' on BBNJ of 52 countries, committed at the highest political level. The EU has also pledged to support the UN Treaty's implementation by developing countries from the EU Global Ocean Programme and has invited members of the High Ambition Coalition on BBNJ to do the same within their capabilities.

II The UN Treaty on the High Seas 2023

The High Seas Treaty was signed in New York on 20 September, during the United Nations High Level Week. The treaty started in June 2023 as an agreement under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction.

Areas beyond national jurisdiction comprise the High Seas and the seabeds. They contain marine resources and biodiversity and provide invaluable ecological, economic, social, cultural, scientific and food security benefits to humanity. However, they are under mounting pressure from pollution, overexploitation, climate change and biodiversity loss. To better address these challenges, and in view of future increasing demands for marine resources (for food, medication, energy, for example), it appeared necessary to establish a new treaty.

This High Seas Treaty should also be instrumental for increasing coherence, coordination and synergies among the ocean-related activities carried out by many organisations and stakeholders, thus contributing to a more holistic management of activities in the high seas.

The BBNJ Agreement has been a priority for the European Union and its Member States, that have led negotiations at global level through the BBNJ High Ambition Coalition (see above the list of countries in the coalition). This landmark agreement is a welcome addition to under the United Nations Convention on the Law of the Sea (UNCLOS), which provides the legal framework within which all activities in the oceans and seas must be carried out, which came into force three decades ago. But UNCLOS only regulated seas within country's territorial waters and exclusive economic zones, leaving nearly half the planet's surface and two-thirds of the ocean unregulated — particularly when it comes to protecting biodiversity.

The new Treaty to cover the previously unregulated High Seas (described as the last truly wild

places on earth) was agreed to [UNCLOS](#). "It is often said that the ocean is too big to fail. That is simply not true," said [Monica Medina](#), the Assistant Secretary of the U.S. Bureau of Oceans and International Environmental and Scientific Affairs, who was the Biden administration's chief negotiator and supporter of the treaty. "The ocean is more fragile than most people understand. It is also more essential. It provides the oxygen we breathe and food for tens of millions of people." She failed to mention it is the biggest carbon sink in the world and the arbiter of our climate.

The UN Treaty on the High Seas (also known as the [BBNJ Agreement](#)) covers the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction and is key to:

- Protection of the ocean
 - Promotion of equity and fairness in the use of oceanic resources
 - Tackling environmental degradation
 - Fighting climate change
 - Prevention biodiversity loss in the high seas
- In a nutshell, the BBNJ Agreement,
- Sets up a procedure to establish large-scale marine protected areas in the high seas (MPA's). This facilitates the achievement of the target to effectively conserve and manage 30% of land and sea by 2030, which was agreed in December 2022 within the [Kunming-Montreal Global Biodiversity Framework](#).
 - Establishes the sharing of benefits from marine genetic resources.
 - Contains clear rules to conduct environmental impact assessments, with the right checks and balances, before human activities take place in the high seas.
 - Foresees capacity building and the transfer of marine technology between the Parties.

This is the first-ever legally binding international [treaty governing the high seas](#) – it was approved by the 193 U.N. member states and imposes rules aimed at protecting the environment and heading off disputes over natural resources, shipping and other matters in waters beyond any country's national jurisdiction. Until now, there has never been any international law governing the high seas, so many individuals and organizations hope the U.N.'s adoption of the measure will mark a clear turning point for vast stretches of the planet where conservation efforts have long struggled in a sort of wild west of exploration, overfishing, oil exploration and deep-sea mining. Roughly two thirds of the Earth's oceans lie beyond national boundaries in an area known as the 'high seas' — yet only about 1% of that largely unexplored expanse has been protected.

In addition to the EU, [87 countries have signed the treaty](#), to provide for the common governance of about half of the Earth's surface and 95% of the ocean's volume, the largest habitat on our blue planet. The adoption of this agreement is a historic achievement marking the successful end of more than a decade of multilateral work and complements UNCLOS.

Ratification of the High Seas Treaty by at least 60 nations is needed to allow the establishment of marine protected areas (MPA's) in the high seas at global level, safeguarding the ocean from human pressures in a major contribution to reducing climate change, to protecting biodiversity and achieving the objective to protect at least 30% of the planet by 2030. The treaty thus addresses a glaring gap in ocean protection and sets a framework for a fair and equitable sharing of monetary and non-monetary benefits from marine genetic resources, and for capacity building and transfer of marine technologies to developing countries, as well as a voluntary fund to support developing countries to achieve UN Sustainable Development Goal 14 on 'Life Below Water'.

Next steps

The BBNJ Agreement will enter into force 120 days after the date of deposit of the 60th instrument of ratification or approval with the Secretary-General of the UN expected in 2025. The EU Commission's submission concludes the BBNJ Agreement has launched the ratification process at EU level. The Council of the EU will have to approve a decision to conclude the agreement after obtaining the consent of the European Parliament. The European Union has committed to support the treaty's ratification and early implementation through the EU Global Ocean Programme and other programs and has invited members of the BBNJ High Ambition Coalition to do the same within their capabilities.

Once the treaty enters into force, a Conference of Parties (COP) from participating countries will meet to oversee the functioning of the treaty. States will have to start doing EIAs and make proposals for MPAs. Private actors will have to report data on MGR (marine genetic resources) access. Countries will be responsible for fulfilling international obligations of protecting and preserving the marine environment. Many parts of the agreement are "state-driven". The treaty is a step in the right direction, but states and existing bodies must also step up.

III Reasons for the BBNJ Agreement

The BBNJ Agreement is an international agreement on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction. The negotiations on the BBNJ Agreement were centred around a package of elements agreed upon by the UN General Assembly in 2015, namely.

- marine genetic resources, including questions on the sharing of benefits.
- area-based management tools, including marine protected areas.
- environmental impact assessments
- capacity-building and the transfer of marine technology.

The BBNJ Agreement will achieve a more holistic management of high seas activities, which should better balance the conservation and sustainable use of marine biological resources. The fact that the deep sea contains resources may not be immediately apparent to those who picture it as a steep descent into darkness dotted with a few glowing anglerfish. The reality is far from it. Scientists estimate that 91% of ocean species are still unclassified. Vast amounts have yet to be explored, with about 80% of the ocean floor still unmapped to modern standards. Scientists are increasingly interested in exploring the potential genetic resources in the ocean, with possible applications from cancer to cosmetics. However, so far, such claims remain speculative. Genetic material with such promise has not been found in the deep sea, but scientists are eager to explore the possibility—a possibility the new Treaty discusses at length.

Jeffrey Marlow, Assistant Professor of Biology at Boston University, and a co-lead of the Deep Ocean Stewardship Initiative's High Seas Treaty working group, explains that scientific research on the high seas is not limited to commercialized products or individual health. Marlow, who researches how microbes consume methane and their possible use in biofuels, says there is also great scientific interest in using resources found in the high seas to advance "planetary health". "The bigger picture there," he explains, "is that microbial communities, in particular, do so much for regulating ecosystems in ways that we still do not understand," which, he later adds, "if we can find a way to bolster that through bioengineering, you know, that has enormous potential." So far, he says only one single commercialized product has come directly from the high seas—a face cream. Regardless, according to Marlow even one "remarkable biological compound" can translate into billions of dollars in the pharmaceutical and cosmetic companies—industries that are watching these developments closely.

That is why nations decided to come together to prevent a "first comes, first serves" situation, because until this Treaty comes into force, the High Seas, which cover two-thirds of the ocean, remain virtually lawless. The last major ocean treaty, the United Nations Convention on the Law of the Sea (UNCLOS) which was enacted in 1982, does not include a comprehensive legal framework for biodiversity in the high seas, nor does it cover more recent activities, such as bioprospecting. The new Treaty lays out specific provisions, including a monitoring and evaluation process, for engaging in the scientific and commercial pursuit of marine genetic resources on the high seas, among other things.

The Treaty is about fairness.

Should genetic resources or significant biological compounds be found in the deep sea, they could represent significant commercial profit. According to the new Treaty, such profit is to be shared equally between nations. For centuries, equity issues—particularly with respect to global economics—have been sidelined in international agreements, but this Treaty makes a clear effort to ensure that everyone benefits from a shared space, especially lower-income nations.

Harriet Harden-Davies, Director of the Nippon Foundation Ocean Voices Programme, has been working on the Treaty for nearly a decade. Having attended every single UN meeting on the Treaty and being a working group lead on behalf of the Deep Ocean Stewardship Initiative, she says that "no one country can conserve the high seas alone. We really need cooperation here. It is a vast space, it is a shared space. Countries need to work together, which means there is a common interest argument here for everyone to be able to participate in the global commons." By commons, she means the high seas and seabed area referred to as the "common heritage of humankind" as per UNCLOS. "We are talking about generating knowledge in the commons, sharing that knowledge with everyone and then using that knowledge cooperatively to conserve the commons." For Harden-Davies, the "first and really important" way the Treaty is an innovative piece of international legislation is that it gives "voice to developing countries" by helping them build capacity. She identifies the latter as a major achievement because "it is the first time that there has been a space in ocean law and policy where countries are going to have a body to talk about this."

Finally, there is the issue of funding. By establishing a joint trust fund, the Treaty seeks to establish a

mechanism that would fairly distribute profits gathered on the high seas and provide technology, capacity building, and training to lower-income nations so they can also participate in scientific missions and development. There is still quite a lot of work to be done on defining and organizing those funding channels.

Marlow explains that “once this treaty goes into effect, any kind of profit that is extracted from the biodiversity of the high seas will be subject to a profit-sharing regime to be determined, but those benefits will hopefully be shared in a more equitable way than they have been in the past.”

This is important because wealthy nations are overrepresented in the high seas, as the area requires immense amounts of energy and resources to access—97% of industrial fishing vessels in the high seas flagged to higher-income nations. This is a sore spot for lower-income nations because wealthier nations now catch the fish that would normally migrate to their waters before they can reach them. “I hope that people will understand that it would be best to close the high seas to all fishing,” advocates biologist Daniel Pauly, professor at the University of British Columbia (UBC) who has been tracking the shrinking fish population for decades. Founder and Principal Investigator of UBC’s research initiative Sea Around Us, Pauly argues this is because “tuna and other ‘highly migratory fish’ occurring in the high seas move back and forth between the high seas and the Exclusive Economic Zone (EEZ) of maritime countries, and thus could be caught within these EEZs.” Closing the high seas to fishing “would enable more equity between countries, as these fish are presently caught mainly in the high seas by the subsidized fleets of a handful of wealthier countries.

The latter words point to the work of bio-economist Rashid Sumaila, Canada’s Research Chair in Interdisciplinary Ocean and Fisheries Economics at the Institute for the Oceans and Fisheries and the School of Public Policy and Global Affairs at UBC. Sumaila was recently awarded the Tyler Prize for Environmental Achievement together with Pauly for their joint contributions to end overfishing.. In a landmark study, Sumaila demonstrated how small coastal communities, largely in the Global South, are disadvantaged by the high seas exploits of wealthier nations and recommended that the high seas be closed to fishing to achieve significant economic and equity-related benefits.

The Treaty is about conservation.

In a historic win for ocean conservation, the Treaty creates a process for establishing MPAs outside of national jurisdiction. According to Marlow, who is also the founder of the nonprofit science education outreach program Ad Astra Academy, “there will now be a way to develop the ‘national parks’ of the high seas—these areas that we find so engaging and amazing that we cannot contemplate harming them in any way will now have a pathway to be conserved.”

Sumaila welcomes the Treaty as “a great first step in a long journey to protect, conserve, and sustainably use the global ocean for the benefit of both current and future generations.” He argues that “to win this struggle, we need all hands to be on deck—civil society, NGOs [non-governmental organizations], academics, journalists, the youth—to push governments and businesses to meet their obligations under the Treaty. Without ‘We the People’ pushing for it, the Treaty will be toothless and meaningless.”

Additionally, the treaty provides ground rules for Environmental Impact Assessments (EIA), which deal with identifying and evaluating the potential impacts an activity could have on the ocean. Carbon sequestration activities, for example, will have to do EIAs when Ocean-based carbon sequestration involves using oceans to remove carbon dioxide from the atmosphere.

The [High Seas Alliance](#), a coalition of conservation groups, has developed a list of biodiversity [hotspots](#) that they say deserve priority protection. While many of these were identified with wildlife diversity in mind, they are also critical to protecting the ocean’s biological carbon pumps.

The [Sargasso Sea](#), in the southeastern Atlantic, and the [Thermal Dome](#) in the Eastern Pacific off the coast of Panama, are two examples of areas that could be protected under the treaty, said [Rebecca Helm](#), a marine scientist at Georgetown University’s Institute for Environment & Sustainability who attended treaty negotiations as an observer for the High Seas Alliance. “In the Sargasso Sea, large amounts of golden algae concentrate in these floating forests. And these forests are an important nursery ground for diverse species of fish and a variety of sea turtles,” she said. It’s also the only sea in the world to be bounded by four ocean currents instead of land borders, and the massive amounts of seaweed pump out large amounts of oxygen. When it dies and sinks to the seabed, it sequesters large amounts of carbon. In the [Thermal Dome](#) region, warm water from the coast meets waters from the depths in a collision that forces cold, nutrient-rich waters up to the surface, nurturing one of the world’s highest concentrations of krill, which form the base of one of the richest marine food webs known to science.

The Treaty is about diversity.

It is worth noting the language in the Treaty when it comes to creating various committees and working groups: repeatedly, it requires that these groups be diverse in gender and ethnicity. It also includes lines that especially address Indigenous voices and those of small Island and archipelago communities. Marlow highlights that “ever since the Challenger Expedition 150 years ago, which was kind of the canonical start of deep-sea research, it [deep-sea research] has been done by western countries, often men.” However, the Treaty’s clauses now reflect “the idea that this global commons only being explored and queried by a tiny subset of the population is not sustainable, and not a great way to be engaging with the ocean.” Nevertheless, it is important to keep in mind that while the Treaty makes a clear effort at inclusion, such language is relatively meaningless without the people willing to put it into effect.

The treaty contains many opportunities for research in ocean science, for building research capacity in low- and middle-income countries, and for improving the evidence available to decision makers. Researchers working with marine genetic resources will need to register their interests with a central clearing house and commit to making data and research outputs open access. Scientists will have an important role in ensuring the treaty’s ultimate success. In part, this will involve gathering or improving the evidence to support the establishment and maintenance of strong marine protected areas and to inform stringent environmental impact assessments. Beyond that, researchers must make every effort to ensure transparency, including declaring the origin and prospective use of any genetic material, and making digital sequence information available through international repositories. This will not only enhance cooperation and capacity-building but will also help governments to develop their own national regulations and procedures in line with the treaty. There’s also the potential for fresh scientific collaboration — for example, using emerging technologies such as telepresence, whereby scientists can take part in research cruises remotely. Marine scientists travelling to, say, the Pacific Ocean could collect samples under the guidance of colleagues elsewhere in real time. The knowledge gained from such collaborations could lead to the commercialization of new products, benefiting scientists and economies around the world.

IV Problems

We know that the Treaty is about resources, equity, conservation, and diversity. What we are lacking are more specifics about how the Treaty would be implemented in practice. Such specifics are extremely broad and are passed on to future working groups and a Conference of Parties (COP). As various committees and working groups, together with a Conference of the Parties, are established and start making decisions, more details will emerge. Marlow describes it as “providing the framework for future versions of ourselves to develop strong conservation approaches.”

We also do not know if or when the Treaty will come into force as it has yet to be ratified. Ratification can be a long process—it took 12 years for UNCLOS to be ratified. At least 60 states need to ratify, approve, accept, or access the Treaty for it to come into force, according to the draft agreement (Article 61).

Next, we need to unravel what this means for the fishing industry, which is mentioned very little in the Treaty despite being a major power player in ocean issues. This may be because commercial fishing is a major sticking point between nations as disparate national economic interests butt heads with environmental concerns and geopolitical tensions. While this Treaty does not address fishing issues, it establishes a protocol for sharing economic benefits tied to the discovery of marine genetic resources. Indeed, questions remain as to how MPAs would be protected from commercial fishing—the Treaty seeks to include all stakeholders in such a process, which could potentially be unwieldy. Marlow called the fishing issue “a non-starter from the very beginning.” It is illustrative to note that the Treaty does not explicitly prohibit commercial fishing in any future MPAs in the high seas and includes language that allows for their “sustainable use” consistent with agreed conservation objectives (e.g., Article 17.4 (e), Article 19.4 of the draft agreement). To achieve this goal, countries will have to annually bring roughly 10 million square kilometres of the ocean under Marine Protected Areas (MPA), according to experts. However, one way to potentially close the high seas to fishing is to establish it as one giant marine protected area (MPA).

However, this is fraught with difficulties. According to Kristina Gjerde, Senior High Seas Advisor for the International Union for Conservation of Nature’s Ocean Team Gjerde, under the Treaty, if a nation starts the application process to establish an MPA in the high seas, it “will need to convince [the regional fisheries management organizations] that the area is best protected by prohibiting all fishing in that region,” adding there might be “pushback” from some members of these

organizations. “Then it is going to be sort of a question of convincing them to save face by, you know, agreeing that they are better off part of this agreement than being pushed back and embarrassed by objecting. I will not say it is a flaw in the process, it is a difficulty in the process, but nobody was willing to give up on their ability to control fisheries.”

A qualification was made to the signatory of the United Kingdom and Ireland:

1. The United Kingdom welcomes the general obligation to interpret and apply the BBNJ Agreement in a manner that promotes coherence and coordination with and that does not undermine other relevant instruments, frameworks, and global, regional, subregional, and sectoral bodies. In this context, the United Kingdom notes that the Antarctic Treaty system comprehensively addresses the legal, political, and environmental considerations unique to that region and provides a comprehensive framework for the international management of the Antarctic.

2. The United Kingdom notes references in paragraph 8 of the Preamble to “the existing rights of Indigenous Peoples, including as set out in the United Nations Declaration on the Rights of Indigenous Peoples, or of, as appropriate, local communities,” and in Article 7(k) to “the rights of Indigenous Peoples or of, as appropriate, local communities”. The United Kingdom’s long-standing and well-established position, set out in its annual explanation of position at the UN General Assembly on the rights of indigenous people, is that human rights are held exclusively by individuals. Except for the right of self-determination (Common Article 1 of the two International Human Rights Covenants), the United Kingdom does not recognise collective human rights in international law. The United Kingdom consider this important in ensuring that individuals within groups are not left vulnerable or unprotected by allowing the rights of the groups to supersede the human rights of the individual. The United Kingdom therefore understands any internationally agreed reference to the rights of indigenous peoples or local communities, including those in the UN

Declaration on the Rights of Indigenous Peoples and, in the Agreement signed today, to refer to those rights bestowed by governments at the national level. The United Kingdom further understands the term “local communities” to be used consistently with the way it is used in the Convention on Biological Diversity.”

In balance, the new High Seas Treaty is rather like “taking one’s vitamins”. It is not exciting, it is not dramatic, it is not a specific medicine. As such, it lacks all the “drama” of being applied to an acute case—a massive, urgent problem on the high seas that needs treatment now. However detailed studies on the effect of a huge population emitting untreated sewerage and wastewater may provide that incentive which would then make the Treaty the first critical step in the journey toward meaningful, shared ocean management.

V How will the Treaty be enforced?

Nichola Clark, who works with the Pew Charitable Trusts' [ocean governance project](#), told CBS News the treaty was "critical for our climate, as the world's oceans play "an important role in regulating our climate - absorbing carbon dioxide and excess heat from the atmosphere, regulating temperatures, and driving our global weather pattern.

Under the 1994 U.N. Convention on the Law of the Sea (UNCLOS), the high seas constitute the waters that lie beyond the 200-mile exclusive economic zone of any littoral country. While UNCLOS established principles mainly related to freedom of navigation, it lacks detailed provisions on environmental conservation and stewardship of the high seas. The Treaty on Biodiversity Beyond National Jurisdiction (BBNJ) — which is the third internationally binding implementing agreement under UNCLOS — is arguably the most significant multilateral environmental convention since the Paris Climate Agreement of 2015.

According to a U.N. Conference on Trade and Development (UNCTAD) [report](#), ocean-based industries were valued at a total of \$2.5 trillion annually (based on 2018 data), while more than estimated 3 billion people worldwide depend on oceans for their livelihood. Undeniably, the open ocean also possesses a wealth of biodiversity and is a provider of crucial ecosystem services, including living resources such as seafood, which many littoral states depend on for food consumption and export.

Despite existing legislation, fisheries in the high seas continue to remain vulnerable to widespread illegal, unreported, and unregulated (IUU) fishing. [Thirty-five percent of the fish stocks are fully exploited in the Western Indian Ocean](#), while IUU activities have also decimated fish stocks in the South China Sea and ravaged the Coral Triangle. While deterioration of ocean health has been traditionally attributed to fisheries, tourism, and maritime transport, other technology-enabled

activities, such as marine renewable energy and biotechnology exploits, have also led to rapid depletion of marine resources.

Notably, environmental NGOs have increasingly lobbied against excessive anthropogenic activities, such as deep-sea mining, that could disrupt marine life and habitats, resulting in irreversible biodiversity loss. Coupled with climate stressors such as pollution causing ocean warming, acidification, deoxygenation, and marine heatwaves, the need for collective action over ocean resilience has never been more urgent as a shared vision for the “ocean commons” gather pace. Unfortunately, only roughly 7 percent of the world’s ocean today are protected.

The BBNJ Treaty addresses this gap by designating Marine Protected Areas (MPAs) in the high seas, with a global target of protecting 30 percent of the world’s oceans by 2030 (30×30) – a pledge committed by countries under the U.N.’s Global Biodiversity Framework in December 2022. Signatory countries will have to abide by these MPAs, which will delineate the extent of fishing activity, as well as shipping lanes and commercial exploration activities. But the definition provided in the draft agreement is vague, Chanchal pointed out. The agreement stated that MPAs are “geographically defined marine area that is designated and managed to achieve specific long-term biodiversity conservation objectives and may allow, where appropriate, sustainable use provided it is consistent with the conservation objectives.” He noted that the definition has mentioned “sustainable use”, which is a cause for concern. There are also concerns that the treaty may not protect the ocean from overfishing, shipping, and deep-sea mining.

Within the Indo-Pacific region, the Association of Southeast Asian Nations (ASEAN) and Asia-Pacific Economic Cooperation (APEC) member states have all initiated resource cooperation campaigns aimed at developing the blue economy. For instance, at the 2017 Jakarta Declaration on Blue Economy, Indonesia proposed the principles of developing marine and fishing industries to boost regional economic development sustainably. In the 2019 Osaka G-20 Summit, Japan shared the “Osaka Blue Ocean Vision” which called for a reduction in marine pollution of plastic litter in the sea to zero by 2050, while ASEAN countries such as Malaysia and Philippines have created Marine Protected Areas as part of their national biodiversity conservation strategies.

Upon ratification, the treaty will contribute significantly to international standards in ocean governance, which hitherto constitutes a patchwork of political institutions and legal standards, often with a narrow focus that is ineffective in managing the cumulative impacts of human activities. For instance, while many Indian Ocean countries claim to comply with fishery regulations, the governance regime in the region is undermined by a lack of an overarching authority providing clear and consistent standards, as well as capacity limitations on enforcement.

Throughout almost two decades of negotiations leading up to the BBNJ Treaty, countries had been locked in debates over various technicalities, including how to distribute potential profits gained from marine resources in a “fair and equitable” manner and where/how marine protected areas will be established. Once ratified by signatory parties, it will establish a new international framework for the *high seas with its own secretariat, under the governance of an intergovernmental conference of parties and with the support of a new scientific and technical committee*.

Despite the passing of a landmark deal on the high seas signed by all member states of the U.N., it will only come into effect when at least 60 countries have passed the legislation in their own countries. Signatory countries are required to initiate the ratification of the treaty based on their own domestic legal procedures, which can be onerous depending on national requirements and circumstances. For comparison, UNCLOS took 12 years to enter into force, while the 30 ratifications required by the U.N. Fish Stocks Agreement took six years.

Building awareness and political will across multiple levels (e.g. national, regional, and global) is imperative for expediting the ratification process. Additionally, civil society and epistemic communities can provide legal, scientific, and technical assistance through track II and III dialogues and initiatives.

The associated financial mechanisms for implementing the treaty, to which the European Union announced it would provide €816.5 million for protecting the ocean on March 2, 2023, will also be instrumental in keeping the 30×30 vision alive. Developed countries will make an annual contribution, but the rate will be fixed by the conference of parties formed after the treaty enters into force. Funding will be created to help developing states implement this treaty. This includes a special fund and a voluntary fund. The latter will allow representatives of developing nations, particularly least developed countries, landlocked developing countries, and small island developing states, to participate in subsequent meetings.

The Global Environment Facility (GEF) — a multilateral environmental fund — has also been roped in.

“We are ready to continue and intensify support for biodiversity protection and ocean health on the high seas,” executive officer and chairperson of GEF, Carlos Manuel Rodríguez, said in a statement. Monetary benefits can also be achieved through MGR (marine genetic resources) and their commercialisation. This “shall be shared fairly and equitably,” the agreement stated. This was a major source of contention during the negotiations. Developing countries insisted that the “obligation to share monetary benefits should be included in the text,” according to The Guardian.

Initial funding could also be available through public-private partnership models providing grants and blended finance; a case in point would be the Global Environment Facility, which spun off from the Global Biodiversity Framework. Meanwhile, other existing or past international bodies such as the U.N. Food and Agriculture Organization (FAO), which actively endorsed the Port State Measures Agreement (PSMA), could catalyse blue economy transitions in specific sectors and/or regions.

In conclusion, many challenges loom on the horizon. Signatory parties will need to adopt an inclusive approach in consulting various stakeholders to formulate a comprehensive action plan that ensures equitable sharing of resources, with sufficient safeguards and recourse available to the small island developing states. Unless countries remain committed to enforce adequate oversight and protection of the oceans that they depend on, it would be inconceivable for their blue economies to stay afloat..

Key Governance Points

- MPAs: The treaty establishes a framework for “*Marine Protected Areas*” — beyond the ones already within national territorial waters — to counter biodiversity loss and degradation of ecosystems of the ocean caused by the impact of climate change, including warming and acidification of oceans, as well as plastics, pollutants and overfishing.
- It establishes standards and guidelines to determine the environmental impacts of high seas activities, including their impact on marine life and ecosystems. It requires signatory countries to present an assessment of pollution or other impacts of their proposed activities on the high seas, such as deep-sea mining.
- The treaty creates a Conference of Parties (COP) to monitor and enforce compliance with the treaty's terms, which will include a scientific advisory board.
- It creates a mechanism for the transfer of marine technology to developing countries to ensure equitable sharing of benefits and resources from the high seas, including materials that could prove ground-breaking in medical and nutrition science.

Final hurdle: National ratifications

There is a final hurdle — or 60, actually — that the new treaty must still clear: It will only go into effect 120 days after it is ratified by at least 60 U.N. member nations individually. In the U.S., that means Senate approval. Clark, of the Pew Charitable Trusts, told CBS News the hope was that the requisite 60 ratifications would be in-hand by the next U.N. Ocean Conference, set to convene in the summer of 2025. “As with all treaties, ratification is the key to bringing it into force, and only then can we implement the benefits accruing. All parties should work towards this being achieved by the time of the next UN Ocean Conference, June 2025, in Nice, France,” the U.N.'s Thomson told CBS News.

But in a sign of the work still to come, Russia's delegate Sergey Leonidchenko on Monday made it clear that his country, “distances itself from the consensus on the text of the agreement prepared by the conference.” While Moscow did not seek to block adoption of the treaty by the U.N., his remarks made it clear that Russia could not yet be counted on for one of the 60 required ratifications, calling the international treaty as written, “unacceptable.”

China, on the other hand is supportive of the treaty. “China has been actively engaged in the negotiations and tried hard to make our contribution,” China's U.N. Ambassador Zhang Jun told CBS News, adding, “we're glad this treaty is adopted today. It's an important step forward in maritime governance.”

Rachel Bustamante, a conservation science and policy analyst at the Earth Law Centre, said that while the treaty is setting new standards for measuring and managing human activities on the high seas, “there are existing bodies responsible for regulating fishing, deep sea mining or shipping that can still continue their activities without following the treaty standards.” The improved environmental impact assessments, as well as enforcement of future high seas regulations, could be critical to making the treaty a success, said Malin Pinsky, an ecologist and evolutionary biologist at Rutgers University.

“There will always be political pressure to enrich ourselves now, thereby impoverishing

ourselves and our children later,” he said. “But if we can separate the science from the political pressures and use clear guidelines to show what impacts the ocean can sustain, then we’ll have a much better chance of succeeding and for this treaty to mean something.”

VI The necessity for a system of Oceanic Governance - Saving our oceans with a new Regulatory Model

As has been pointed out before, but which is still not accepted let alone understood by the vast majority, is that even if we employed techno-fixes such as Bill Gates’ *Solar Radiation Management Company*, it would not stop climate change’s evil twin, ocean acidification, which is threatening to collapse the entire marine ecosystem. A recent paper by marine biologists and environmental consultants has warned that human society faces extinction if nothing is done to reverse the destruction of the oceans-

“Over the last 70 years since the 1950’s and the production of toxic forever chemicals and plastic, more than 50% of all marine life, including plants and animals under 1 mm in size, have been lost from the world’s oceans, and that decline continues at a rate of 1% year on year...Over the next 25 years, pH will continue to drop from pH8.04 to pH7.95, and carbonate-based life forms will simply dissolve. This will result with an estimated 80% to 90% loss of all remaining marine life when compared to the 1950’s. Becoming carbon neutral will not stop the pH from dropping to 7.95, and even in the unlikely event of the world achieving Net Zero by 2030 it will not stop the pH dropping to less than pH7.95. Coupled with the micro-plastic and toxic chemical stressors on marine life, the GOES team believe there will be a trophic cascade collapse of the entire marine ecosystem”.

This comment does not include the loss of the ocean’s role as a carbon sink, oxygen producer and healthy modify weather events, rather than being the source of great storms and increased precipitation through temperature increases,

So, although as of 2023 we have a UN Treaty on the Seas we have no regulatory model to police it. Hence the use of the author’s optimum regulatory model for financial systems is proposed to be applied to supervise a treaty designed to conserve and sustain biological diversity, and by extension control any act that would destroy that, including discharge of sewerage, wastewater and heated water used for thermal cooling.

A taxonomy for classifying financial systems developed by the author helps understand the design principles of any regulatory model designed to ensure oceanic maintenance of its essential functions of oxygen generation, carbon capture, provision of food, transport, and leisure tourism.

This taxonomy (Currie, 2000) distinguishes between Prudential Supervisory Systems, which have different methods of Compliance Audits (strong and weak), Sanctions (strong and weak) and Enforcement Modes (seven types) and Protective Measures (institutional vs. discretionary in various weak/strong combinations). These permutations and combinations give a total of 140 models ($2 \times 2 \times 7 \times 5 = 140$).

Enforcement Modes range from conciliators to strong enforcers, representing a scale from weak to strong. *Conciliatory modes* are ones where law enforcement is rejected, and conciliation is used to resolve disputes. *Benign Big Guns* are modes whereby enormous power is given in terms of confiscation, takeover of activities, seizure, increasing operational rules, banning of products. Powers are rarely used - the threat is sufficient. This model has been called "regulation by raised eyebrows" or "by vice-regal evasion". *Diagnostic Inspectorates* are modes where supervision is carried out by encouraging self-regulation by well qualified inspectors detecting non-compliance. The goal is a co-operative relationship. *Token Enforcers* uses enforcement modes where co-operative and self-regulation is not important. *A Detached Token Enforcement mode* is more rulebook oriented, training staff, prosecuting more, seizing assets, targeting repeat offenders. *Detached Modest Enforcement* involves rule-book inspections, steady flow of prosecutions, with modest penalties. *Strong Enforcers* use all forms of enforcement licence suspensions, shut down of productions, injunctions, and adverse publicity, as well as high penalties.

There is obviously a need for an agency to be continuously developing guidelines for safe disposal of sewerage, wastewater and other discharges and taking remedial action together with assessment of aid. The type of Enforcement mode could be detached Modest enforcement.

In the case of noncooperation by the offending country, the official UN treaty agency could develop a range of Sanctions to be applied. These could be industry based whereby there is consultation re appropriate preventative measures, discussion papers with written and oral input

sought from industry via the Exposure Draft process, imposition of codes of conduct, imposition of direct controls, including development of licensing rules, changes to pollution laws, enforced divestitures or acquisitions on an industry basis, and finally nationalization of the polluting industry. Sanction types can also be *firm based*. The broader part of the first firm-based pyramid of sanctions consists of the more frequently used regulatory sanctions - coaxing compliance by persuasion. The next phase of enforcement escalation is a warning letter followed by imposition of civil monetary penalties, then criminal prosecution, plant shutdown or temporary suspension of a license to operate. Each stage is only followed if there is failure to secure compliance. At the top of the firm-based enforcement pyramid of sanctions, there is permanent revocation of licenses. The necessity of each escalation should be backed by scientific evidence.

Compliance Audits range from Weak to Strong and can be applied at Firm or Industry or Country Level. *Firm Level compliance audits* consist of offsite examinations only using information supplied by the polluting party. A further escalation of concern would involve surprise onsite inspections of all aspects of the source of the pollution.

Protective Measure Types are usually all firm, industry or country based to keep pollution measured by scientific standards of PH, oxygen production, food security and the health of carbon capturing microorganisms as well as the safety of the Deep Sea at healthy levels.

Compliance audits and protection measures could be conducted by the COP employing a team of the best scientists, which would also need to police the MPAs and ensure equity and diversity. Obviously, a dedicated trust fund would need to be established to fund such activities offset by any gains from public private financial ventures and exploitation of deep-sea research.

The modus operandum for COP to measure and monitor has been suggested in a recent article by [nature.com](https://www.nature.com)-

“To avoid unnecessary extra work, the toolkit proposes that countries adopt existing measures, such as indicators of SDG progress and those developed through the UN’s System of Environmental Economic Accounting (SEEA). These could include, for example, the contribution of sustainable fisheries to national income; tracking the share of energy research and development spending that goes to ocean and offshore renewables; and reporting the density of ocean plastics. But new indicators will also be needed, for example, to monitor a pledge made last week by some 164 countries (at the World Trade Organization) to stop government subsidies that threaten the sustainability of fisheries. That will need researchers to advise on the nature and extent of subsidies and how these can be reduced in a way that people, especially those on the lowest incomes or who are most vulnerable, are not harmed. Not all countries will have access to the required data, and some might need time to collect, standardize and analyse the information. That’s where the panel’s research advisers can, and should, help. The panel members (should be) advised by an expert committee of more than 70 researchers, in addition to more than 250 researchers representing 48 countries Researchers must now work with the panel to help improve and standardize existing indicators and, where necessary, create new ones. Reporting on progress doesn’t need to be a legally binding process. Most important is that progress is measurable, based on a consensus of international expert opinion, and that it is reported on regularly by the panel. A number of frameworks might be suitable for this, including one suggested in a study in *Nature Sustainability* by Eli Fenichel, a researcher now at the White House Office of Science and Technology Policy in Washington DC, and his colleagues ([E. P. Fenichel et al. *Nature Sustain.* 3, 889–895; 2020](#)).

Such a regulatory model may appear severe but without the necessary enforcement and audit of oceanic health the prediction of disaster would eventuate even within our current lifetimes. Saving the ocean gives us time to develop alternative methods of energy and food production.

Driven mostly by rising global temperatures from the continued burning of fossil fuels, extreme weather events such as typhoons, hurricanes, floods, heatwaves, and drought are becoming more frequent, increasing 83% worldwide in the past 20 years (as of 2020), and the costs have increased by 800% over that same period. In 2023, the world has witnessed the highest ocean surface temperature, lowest Antarctic Sea ice extent ever recorded, and hottest summer. This sets Earth on course to cross multiple dangerous tipping points that will be disastrous for people across the world. To maintain liveable conditions on Earth and enable stable societies, we must do everything possible to prevent crossing tipping points.

Taking action to cool the ocean and return it to its natural function is probably the fastest most economical and socially beneficial way to protect the world from climate change but it requires a

strong regulatory governance model to ensure the 2023 Treaty on the Seas is complied with. Funds already committed to climate change could be used to both prevent oceanic pollution and improve the standard of living in polluting countries.