

An Analysis of the Coordinated Legal Path between Marine Biodiversity Conservation and Sustainable Financial Regulation from the Perspective of International Environmental Law

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ABSTRACT

International environmental legislation has never been adequate to conserve biodiversity in the high seas and areas beyond national jurisdiction. The BBNJ Agreement, which was adopted in 2023 and which will enter into force in 2026, has given a definitive institutional structure on this subject. Financial regulation is starting to focus on natural hazards, thanks to the "Kunming-Montreal Global Biodiversity Framework" and TNFD's disclosure recommendations. However, the organic relationship between the conservation commitments at the level of international law and the specific laws of financial regulation is still lacking. The article begins with the legal obligations under the BBNJ Agreement, then surveys the latest developments in the sustainable finance for biodiversity protection, and highlights the institutional gaps in information disclosure, risk assessment and liability attribution between the two, before offering a collaborative solution. The article believes that the institutional gap should be closed from four levels: establishing special disclosure indicators for marine biodiversity, building financial risk assessment standards, promoting the alignment of international regulatory rules, and improving the legal basis for blue financial tools. These approaches may serve to translate the demands of international environmental law into operational principles of financial regulation and to mutually reinforce the promotion of ecological conservation and financial governance.

KEYWORDS

International environmental law; Marine biodiversity; BBNJ Agreement; Sustainable finance; Regulatory synergy; TNFD framework.

1. INTRODUCTION

The ocean covers about 71 percent of the total surface area of the Earth, while high seas form 64 percent of the overall ocean area, which is approximately half of the total surface area of the Earth. This large marine area has a diverse ecosystem from deep-sea hydrothermal vents to pelagic migratory fishes and plays an important role in climate regulation and carbon sequestration. The ocean absorbs roughly a third of man-made carbon dioxide emissions and absorbs around 90% of global warming. It has an inestimable ecological value. For a long time, the high seas have been in a regulatory void. The principal legal document controlling the oceans is the United Nations Convention on the Law of the Sea yet it does not contain extensive provisions on the conservation of biodiversity. Existing regional fishery groups and agreements against pollution are not enough to ensure systematic protection of the maritime ecology.

That legal gap took almost two decades to close. The UN General Assembly created the BBNJ Working Group in 2004 and in late 2017 adopted Resolution 72/249 to initiate inter-governmental

negotiations. The draft agreement was unanimously adopted on 19 June 2023 and opened for signature on 20 September 2023. 67 countries including China signed it on that day. By September 2025, the deal had been approved by 60 countries and it entered into force on January 17, 2026. The BBNJ Agreement provides a legal framework for the regulation of the high seas. The success of the implementation of the BBNJ Agreement relies not only on the commitment of each country to fulfill the responsibilities, but also on the engagement of social capital.

And the rules of sustainable financial regulation are changing also. The financial sector is starting to acknowledge the effects of financial movements on natural ecosystems [1]. Action Target 15 of the Kunming-Montreal Global Biodiversity Framework calls on large companies and financial institutions to regularly monitor, assess and report risks and impacts related to biodiversity. In September 2023, the TNFD published final recommendations to guide the management of natural-related risk. It seems the connection between the demands of international environmental law and the principles of financial regulation and creation of a cooperative channel is yet to be achieved. The paper discusses the BBNJ Agreement within the framework of sustainable financial regulation in terms of legal coordination and analyses the probable forms of their positive interaction.

2. BBNJ AGREEMENT: THE INTERNATIONAL LEGAL BASIS FOR MARINE BIODIVERSITY CONSERVATION

We need to understand the institutional structure of the BBNJ agreement before we can speak to the intersection of the two. The agreement is the third implementing agreement within the framework of the United Nations Convention on the Law of the Sea (UNCLOS) and provides a legal basis for the conservation and sustainable use of biodiversity in areas beyond national jurisdiction [2]. The agreement deals with four issues: marine genetic resources and benefit-sharing, area-based management techniques (ABMTs) including marine protected areas, environmental impact assessment, and capacity-building and marine technology transfer. These four elements constitute the normative basis for the protection of the high seas.

The agreement introduces a new innovation, the ABMTs. They are defined as "tools for the management of one or more domains or activities within a defined geographical area, with the aim of achieving specific conservation and sustainable utilisation goals, including marine protected areas" (p. 1). Marine protected area means a designated area of sea that is set aside and maintained to achieve long term outcomes for biodiversity conservation and may also allow sustainable use as may be permitted by the conservation objectives. This is analogous to the setting of ecological red lines in the high seas, which is practically important for the promotion of the "3030 Goal" (to protect 30% of the ocean area by 2030). The creation of the protected area will govern the economic activities related to it and will change the assessment of investment and financing initiatives.

It establishes standards for sharing benefits from marine genetic resources. Marine genetic resources are defined as "any material of marine plant, animal, microbial or other origin containing functional units of actual or potential value" [3]. This implies that commercial exploitation has to pay fees or share earnings, thereby creating a mechanism of "utilisation feeding back to protection". Financial institutions engaging in such schemes need to enhance compliance evaluation and re-assess costs and benefits.

The other key element of the agreement is the framework for environmental impact assessment. The United Nations Convention on the Law of the Sea already contains duties for environmental impact assessment in Part XII. The agreement details operating procedures, thresholds and reporting requirements. Public maritime activities need to be pre-environmental impact research. Financial institutions supplying finance need to verify that the project fits the standards, otherwise they may suffer from risks due to the project being shelved. All major economies including China, Germany, Japan, France and Brazil have approved the agreement, and the binding effect is fast spreading,

creating international legal foundations for the interaction between financial regulation and maritime protection.

3. THE DEVELOPMENT OF SUSTAINABLE FINANCIAL REGULATION IN THE FIELD OF BIODIVERSITY CONSERVATION

The legal conditions in the globe are already in place. However, the response of the financial regulation is still in the exploratory phase. Only recently, central banks in different nations have started to pay attention to the impact of loss of biodiversity on the financial system [4]. The degradation of natural capital is transmitted to the financial sector through credit, market and operational risk channels, supporting the construction of institutional frameworks from principles to details for sustainable financial regulation in this space.

The Kunming-Montreal Global Biodiversity Framework sets forth the approach for mobilising resources for financial forces to participate in conservation activity. Developed countries will have to deliver 20 billion US dollars a year in aid to underdeveloped countries by 2025 and increase it to 30 billion US dollars by 2030. At the same time they should decrease environmentally harmful subsidies by 50 billion US dollars a year. Even if all these aims were achieved, there would still be a worldwide annual financing gap of over 700 billion US dollars and public finances could not cover the whole gap. [5] Private capital is a vital alternative. The framework will impose information disclosure obligations on financial institutions, with risks to biodiversity treated on an equal footing with climate in terms of regulatory weight.

There are also advances in the integration of information disclosure standards. In September 2023, the TNFD released its final recommendations, providing a framework for companies and financial institutions to assess, manage and disclose nature-related risks and opportunities. The G20 Sustainable Finance Roadmap has identified the LEAP core analytical tool as a priority and in 2025, ISSB signed a letter of understanding with TNFD which wants to implement the design principles of this framework into its future work. While the TNFD's analytical approach to indicator development is terrestrial and freshwater focused, it can be utilised as a reference for identifying marine biodiversity issues.

China has been a lot quicker in its practice. In early 2024, the "China Biodiversity Conservation Strategy and Action Plan" was released, which, for the first time, incorporated the disclosure of natural-related information into the national policy structure. The central bank then issued "Biodiversity Finance Catalog" for financial institutions to offer basis for classification and data. October 2025: Weihai Bank released the first domestic natural-related information disclosure report; Ya'an Rural Commercial Bank established the goal of "zero deforestation" in the following report. In July 2026, several Shenzhen-based financial institutions published the initial centralised publication of TNFD reports. These discoveries show the progression of biodiversity from a secondary concern to climatic concerns to a standalone regulatory domain, offering knowledge for the development of maritime rules.

4. THE NECESSITY OF SYNERGISTIC EFFORTS BETWEEN MARINE BIODIVERSITY CONSERVATION AND SUSTAINABLE FINANCIAL REGULATION

It is not an artificial design based on institutional integration, but an unavoidable decision based on practical needs. Their effectiveness consists precisely in the fact that they prove the likelihood of synergy. Such a synergy is needed for a number of reasons.

This synergy is required in the financing dilemma of the BBNJ Agreement. Article 52 of the agreement provides for a financial mechanism comprising a voluntary trust fund, a global

environment fund trust fund and a special fund to provide "adequate, accessible, new, additional and predictable financial resources" to developing countries for the implementation of the agreement [6]. Developed State Parties are obligated to contribute to the special fund. The problem is that the level of international finance for biodiversity is now substantially below what is needed to meet the KMGBF targets. Capital inputs are needed for the demarcation of protected areas, for implementation of benefit sharing of genetic resources and for building up environmental assessment capacities. The reality is that public capital is limited and private capital has to be attracted to fill that gap.

Financial regulation must also intervene in the hidden hazards of biodiversity in the commercial activity of the sea. The BBNJ Agreement includes provisions for environmental impact assessments of activities in the high seas. Financial institutions that provide finance for projects such as deep-sea mining, distant-water fishing or laying of underwater cables need to consider the potential damage that these activities could do to marine environments. The World Wide Fund for Nature's Guidelines for Central Banks and Financial Regulatory Authorities on Marine Conservation recommends that financial institutions evaluate and disclose their exposure to marine risks and embed marine risks into the development of monetary policies, the daily supervision and stress tests. If this risk dimension is overlooked, financial institutions may not only suffer investment losses due to failed environmental impact assessments, but also be involved in reputational crises or legal procedures due to ecological damage.

The achievement of international legal requirements also require collaboration of financial regulators. For the BBNJ Agreement, there is a need for governments to undertake actions for conservation and compensation and such actions can only be realised when the behaviours of market entities are carefully monitored. Regulators may indirectly influence the behaviour choice of market firms on the high seas via credit rules, investment standards and information disclosure requirements [7]. In this way, generic international legal duties can be transformed into specific economic incentives and limitations. Without the synergy mechanism, international environmental legislation has no transmission pipeline. Finance regulation will also have systemic concerns by disregarding biodiversity threats.

5. INSTITUTIONAL OBSTACLES TO THE SYNERGY BETWEEN MARINE CONSERVATION AND FINANCIAL REGULATION

But necessity is one thing, but can achieve it is another. There are now at least three institutional impediments.

The first is the difference in the relevance of the criterion of information disclosure. The TNFD framework has broadened the scope of the ocean, but the present quantitative assessment indicators are mainly suitable for terrestrial and freshwater ecosystems and do not effectively capture the peculiar risk manifestations of marine biodiversity, such as physical damage to deep-sea habitats, ocean acidification, the diffusion of plastics and microplastics, and underwater noise disturbance. Financial institutions also have major deficiencies in professional competencies, lacking the stores of ecological knowledge to turn the conservation goals specified by the BBNJ agreement into operational quantitative indicators, hence information disclosure is primarily formal in nature [8].

Secondly, there is a lack of consistency in international regulatory requirements. At the high seas level, the BBNJ agreement has established a fairly unified legal duty structure. Nevertheless, the core locus of financial regulation remains in the domestic legal system of each country. The stocktake report of the FSB published in July 2024 shows that there are significant differences in the assessment processes of financial regulatory authorities in the different member countries of the FSB for the financial risks related to biodiversity—some countries have identified it as a material source of financial risk, while other countries are still at the beginning stage of tracking international developments. This institutional fragmentation has placed international financial bodies in a double

bind. It is difficult to estimate the compliance costs precisely and therefore the scope for cross-border regulatory arbitrage is retained [9].

Third, the transmission mechanism of obligation is not clearly formed. The BBNJ agreement imposes conservation obligations and potential liabilities on states but is unclear how state accountability would translate into liability for financial institutions. The agreement itself does not establish clear legal accountability conditions for financial institutions for the ecological damage to the ocean caused by their financing activities. The relevant institutional arrangements are not frequently provided for in the domestic legislation of various countries. Damage to marine biodiversity is rarely included in the financial liability system. Environmental harm is still mostly compensated for by the actual perpetrator, and seldom reaches the funding provider. The current guidance on credit for "environmental and social risk" is largely soft law. The consequences of breach are normally confined to regulatory sanctions and there is no route to civil restitution. This disrupts the liability chain and hence reduces the true binding impact of financial regulation upon marine protection.

6. EXPLORING INSTITUTIONAL COORDINATION AND PATHWAYS FOR REGULATORY SYNERGY

But these initiatives now demonstrate that the connection between marine protection and financial oversight is not a fiction, despite many institutional obstacles.

The financial terms of the BBNJ acquisition have been worked out. Article 52 establishes a separate fund whose resources include fees from commercialisation of marine genetic resources, royalties, profit sharing, etc. It is logical that profits from commercial development are reinvested into ecological conservation. The IUCN policy brief (February 2025) says digital sequence information can be a finance mechanism for BBNJ and has made proposals on financial collaboration.

Also, there are initiatives at the level of soft law. The Kunming-Montreal Global Biodiversity Framework serves as a guide for countries to incorporate elements of biodiversity into domestic finance regulatory legislations. As a leader of "One Ocean Finance" UNEP FI catalyses mobilisation of financing into the blue economy through public-private partnerships. The Blue Economy and Finance Forum said it would invest EUR 8.7 billion in the next five years, ahead of the third United Nations Ocean Conference in June 2025. This global effort shows that the international community is moving from observation to involvement.

National practices are rather specific. The Dandong Branch of the People's Bank of China has guided financial institutions to link with financing for marine fisheries farms, and launched the first special blue loan for enhancement and release in Liaoning Province with the "Biodiversity Finance Directory" as a reference. In 2026, Qingdao Bank granted a loan that has been certified by the blue financing standards. In November 2024, the Indonesian Ministry of Marine Affairs and Fisheries issued Ministerial Decree No. 27, which established the legal framework for the "Blue Window" trust fund to attract third-party funds to intervene in the risk management of damage to marine resources.

The legal approach can be viewed from three angles. The TNFD framework must have specific indicators for marine biodiversity, provide assessment procedures for particular risks such as deep-sea ecology, acidification, and plastic pollution, and regulatory authorities should establish disclosure rules. The ENCORE approach is used within the framework of risk assessment to construct a marine ecosystem risk detection model embedded in loan approval and investment decisions. From the perspective of standard alignment, the BBNJ contracting parties should consider the financial regulatory requirements in the development of implementation regulations, and the Financial Stability Board and ISSB should establish a regular coordination mechanism with the Secretariat of the Agreement. We also need to promote blue bonds, blue loans and marine biodiversity insurance in addition to fiscal incentives and risk compensatory mechanisms. Meanwhile, regulatory measures for certification and anti-blue-washing need to catch up [10].

7. CONCLUSION

The final conclusion on the feasibility of the above pathways is based on a simple assessment: the implementation of the BBNJ agreement cannot be based on national compliance, but must be supported by financial regulatory systems. This opinion permeates the overall analysis from the underlying institutional architecture of the agreement, the recent developments in financial regulation, the need for cooperation and the present impediments. The article argues that the contradiction between international environmental policy and financial regulation is both interdependent and separated.

There are three major hurdles to coordination, i.e., the lack of universal standards for information disclosure, the institutional gap in regulatory rules among different jurisdictions and the ambiguous mechanism for transmission of legal culpability. However, despite the clear constraints, there are also numerous amazing institutional sprouts in international practice, like the financial mechanism in the agreement, the policy framework of KMGBF and the blue finance investigation by some nations. These attempts are not developed, but they are a reference direction.

To explore a legal way of coordinated supervision, we should focus on the following four aspects: (1) improve the disclosure indicators of marine biodiversity; (2) establish standards for risk identification and assessment; (3) promote the international convergence of regulatory rules; and (4) innovate blue finance tools. The aim is to transform the conservation commitments included in international environmental legislation and the needs of environmental assessment into specific standards that financial institutions can identify, measure and implement, so that the legal rules are genuinely practicable.

The rules for the implementation of the BBNJ agreement are yet to be developed and the global biodiversity finance system is in transition, which leaves room for institutional innovation. The directions to be noted in the next stage include countries participating in rule-making, while acknowledging variations in development stages and supporting regulatory convergence. This is necessary not only for the preservation of marine ecosystem but also for the capacity of the financial system to identify and manage natural risks. The present discussion among the international legal and financial regulatory community has some relevance for institution building.

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