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Nasywa Intan Ramadhanty

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Addressing biopiracy through the BBNJ agreement's marine genetic resources framework: Reflections from the clarion-clipperton zone for Indonesia's future

Nasywa Intan Ramadhanty

Faculty of Law, Universitas Gadjah Mada, Jl. Sosio Yustisia Bulaksumur No.1, Karang Malang, Caturtunggal, Kec. Depok, Kabupaten Sleman, Daerah Istimewa Yogyakarta 55281, Indonesia
email: nasywaintanramadhanty@mail.ugm.ac.id

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ABSTRACT

Marine Genetic Resources (MGRs) located in Areas Beyond National Jurisdiction (ABNJ) have long been subject to asymmetric appropriation, with a single corporation controlling 47% of patented marine genetic sequences and entities from just ten countries holding 98% of such patents (Blasiak et al., 2018). This article examines how the United Nations Convention on the Law of the Sea (UNCLOS) 1982 facilitates this appropriation through structural legal gaps, how the [BBNJ Agreement \(2023\)](#) addresses them, and the implications for Indonesia. Employing a normative juridical methodology with statutory and conceptual approaches, the study finds that the UNCLOS definition of "resources" excludes MGRs from the Common Heritage of Mankind regime, while Parts XIII–XIV provide no binding benefit-sharing mechanism. These conditions are empirically observable in the Clarion-Clipperton Zone (Rabone et al., 2023). Part II of the [BBNJ Agreement \(2023\)](#) introduces a dedicated MGR framework comprising notification obligations, a Standardized Batch Identifier, and two-phase benefit-sharing; however, four structural limitations persist: retroactivity opt-out, deferred monetary benefit-sharing, derivatives ambiguity, and an unresolved ISA interface (Bodansky, 2024; Humphries, 2025). For Indonesia, capturing the Agreement's opportunities in data access, Special Fund support, and COP participation requires regulatory consolidation across fragmented domestic instruments, a designated national focal point, and strategic investment in deep-sea research capacity.

Keywords: BBNJ agreement; biopiracy; marine genetic resources; post-ratification implementation; UNCLOS

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1. INTRODUCTION

The deep ocean is a vast genetic resource. These genetic resources are legally known as Marine Genetic Resources (MGRs). However, the law on access to marine genetic materials in Areas Beyond National Jurisdiction (ABNJ) has not kept pace with scientific progress. Compounds from deep-sea microbes, hydrothermal vent creatures, and other marine life have great commercial value in the pharmaceutical and biotechnology industries. The commercial search for these compounds is often called "bioprospecting" (Aricò & Salpin, 2005). This practice has grown rapidly since the 1990s, but there is no binding agreement in the ABNJ that requires those who profit from these discoveries to share the benefits (Blasiak et al., 2018).

The [United Nations Convention on the Law of the Sea \(UNCLOS\) \(1982\)](#), the basic legal instrument for ocean governance, provides no sufficient response. Before modern biotechnology, UNCLOS did not define MGRs or regulate bioprospecting. The practical difference between marine scientific research and bioprospecting is also acknowledged to be very thin (Tanaka, 2019). A deeper issue is definitional. Article 136 designates the Area and its resources as the Common Heritage of Mankind (CHM), but Article 133 confines the term "resources" to solid, liquid, and gaseous minerals (UNCLOS, 1982). This is a definitional boundary that effectively excludes marine organisms from the CHM regime and creates a structural legal gap for the unilateral appropriation of biological material. The consequences of this distribution are evident. One German corporation, BASF, controls 47% of all MGR sequence patents, and entities from just ten countries hold 98% of patented marine genetic sequences, with 165 countries being very underrepresented (Lodge et al., 2014; Blasiak et al., 2018). This pattern of appropriation is most empirically observable in the Clarion-Clipperton Zone (CCZ), a 6-million-kilometer² abyssal plain spanning the central and eastern Pacific Ocean, which offers the most instructive context for examining this normative failure (Durden et al., 2021; Thambisetty, 2025).

Concurrently, the International Seabed Authority (ISA) has issued 31 mineral exploration contracts globally, of which 17 are located in the CCZ, making it the most intensively explored ABNJ on Earth (International Seabed Authority, n.d.). Thus, CCZ crystallizes a broader paradox. Pacific Small Island Developing States, such as Nauru and Tonga, formally sponsor extraction contracts but lack the technological capacity to derive independent benefits from the biological data generated by such activities.

It is against this backdrop that the [BBNJ Agreement \(2023\)](#) must be assessed. Part II of the Agreement introduces, for the first time, a dedicated MGR regime encompassing pre- and post-collection notification obligations, a Clearing-House Mechanism, a standardized traceability identifier, and a two-phase benefit-sharing framework. In this analysis, the CCZ is employed not as the principal object of study but as an illustrative case through which the structural permissiveness of the existing regime can be empirically observed. The CCZ functions as a cautionary mirror, as the asymmetric outcomes experienced by Pacific Small Island Developing States (SIDS) in that region illuminate the structural risks that megadiverse but technologically constrained states, including Indonesia, must guard against in the post-ratification phase.

Indonesia ratified the [BBNJ Agreement \(2023\)](#) through Presidential Regulation or Peraturan Presiden Republik Indonesia No. 67 of 2025, enacted on June 4, 2025, and formally declared its ratification at the Third UN Ocean Conference (UNOC-3) in Nice on June 10, 2025, with the instrument of ratification subsequently being deposited with the UN Secretary-General (Peraturan Presiden Republik Indonesia, 2025). Against this backdrop, this article advances a central thesis: Indonesia's ratification, while a necessary normative commitment, is an insufficient step on its own toward translating normative entitlement into substantive benefit. Without targeted regulatory consolidation, institutional coordination, and investment in deep-sea research capacity, ratification risks reproducing the pattern of formal participation without substantive return that has characterized Pacific sponsoring states in the CCZ. To substantiate this thesis, the analysis was conducted in three stages. First, it establishes the normative backdrop by examining how UNCLOS's structural gaps have enabled patterns of MGR appropriation empirically observable in the CCZ. It then assesses Part II of the [BBNJ Agreement \(2023\)](#) as both an opportunity structure and a constrained regime, identifying four structural limitations that define the

arenas in which State Parties must now operate. Finally, as its principal contribution, it evaluates Indonesia's legal and policy readiness to navigate these arenas as a megadiverse archipelagic state and active G77 member (Dirhamsyah, 2021; Peraturan Presiden Republik Indonesia, 2025).

2. METHODOLOGY

This study uses a normative-juridical approach that views positive law as the main object of analysis. It combines statutory and conceptual approaches. The main legal documents studied were UNCLOS (1982), the BBNJ Agreement (2023), the Nagoya Protocol (2010), the Presidential Regulation of Indonesia or Peraturan Presiden Republik Indonesia No. 67 of 2025, and other relevant laws. Secondary materials include peer-reviewed scholarship, scientific literature on marine genetic resources, and commentary on international law of the sea. Sources were gathered through library research and analyzed using a prescriptive-analytical approach. The analysis pursues three sequential aims that build toward the central thesis: to identify how UNCLOS's structural gaps enable MGR appropriation in the Clarion-Clipperton Zone; to evaluate the BBNJ Agreement's (2023) Part II as a constrained response regime; and as the principal analytical objective, to assess Indonesia's post-ratification legal and policy readiness.

3. RESULTS AND DISCUSSION

3.1. The Legal Gap in UNCLOS: Structural Permissiveness Toward MGR Appropriation

The UNCLOS (1982) described by its chief negotiator Tommy Koh as "a constitution for the oceans" was drafted before modern marine biotechnology existed (Koh, 1982). Its negotiators were focused on delimiting maritime zones and regulating mineral extraction from the deep seabed, and the commercial potential of marine organisms was not yet a legal concern. The result is a set of structural gaps in the literature. Applied to MGRs in ABNJ, these gaps produce a regime that permits unilateral appropriation, a phenomenon long described as "biopiracy" (Anisimov & Gulyaeva, 2022).

The foundational gap lies in Article 133 of UNCLOS, which defines "resources" in the Area as "all solid, liquid or gaseous mineral resources in situ in the Area at or beneath the seabed." This definitional boundary is legally determinative because Article 136, which declares the Area and its resources the CHM, operates exclusively within the scope of that definition (UNCLOS, 1982). The CHM principle, with its attendant obligations of equitable benefit-sharing, non-appropriation, and ISA administration, consequently applies to polymetallic nodules but not to the organisms that close them (UNCLOS, 1982). The paradox generated by this is acute in the CCZ. A manganese nodule extracted from the abyssal sediment is subject to the full CHM regime, whereas the microorganisms adhering to its surface, potentially containing novel bioactive compounds, are not. This is one of the most fundamental inconsistencies in contemporary international deep-seabed governance. Crucially, the exclusion was not deliberate; it reflects a gap by omission, a product of the conceptual horizons available during UNCLOS III negotiations (1973–1982), not an affirmative decision to place MGRs outside CHM (Lorca & Derrig, 2023).

The void left by Part XI is not filled by the other UNCLOS provisions. Instead, access to MGRs in the ABNJ is governed de facto by permissive regimes. Article 87(1)(f) UNCLOS guarantees the classic freedoms of the high seas, including freedom of scientific research, as elaborated in Parts VI and XIII, available to all states and competent international organizations in the water column beyond national jurisdiction (UNCLOS, 1982). The effects of this flexibility are evident. A previous study analyzed 38 million patent records and identified 12,998 sequences from 862 patented marine species. Most of these species are from oceanic areas. Approximately 11% of patented sequences originate from species in deep-sea ecosystems and hydrothermal vents. These areas are often found in ABNJ, where there is no binding access or benefit-sharing framework (Blasiak et al., 2018; Zhivkoplis et al., 2024).

In the CCZ, environmental baseline studies are not optional; they are written into every ISA exploration contract. Hundreds of thousands of biological occurrence records are stored in the ISA's DeepData database (International Seabed Authority, n.d.; Rabone et al., 2023; Kröger et al., 2025). Yet, neither UNCLOS nor the ISA Mining Code regulates who owns the biological material or the digital sequence information that these studies continue to produce. The normative gap is significant in its own

right and merits further discussion. In practice, this situation is more complex. Pacific SIDS sponsor the companies doing the exploring, but they do not have the labs, bioinformatics pipelines, or institutional muscle to turn raw biological data into actual science, let alone into something commercial ([International Seabed Authority, n.d.](#); [Amon et al., 2022](#)). These structural deficits collectively constitute the negotiating mandate that produced the [BBNJ Agreement \(2023\)](#).

3.2. The BBNJ Agreement's MGRs Framework: Normative Advances and Structural Limitations

The [BBNJ Agreement \(2023\)](#) was adopted on June 19, 2023, and entered into force on January 17, 2026. Part II is central to the present analysis, the first international legal framework written specifically for MGRs in ABNJ, and a direct answer to the gaps UNCLOS never closed. It also fills in where the Nagoya Protocol leaves off: Nagoya's Article 3 ties its scope to CBD Article 15, which only reaches genetic resources within the national jurisdiction. Everything beyond that line, the high seas, and the Area fell through the cracks until now ([Convention on Biological Diversity, 1992](#); [Nagoya Protocol, 2010](#)). The most politically contentious issue throughout BBNJ negotiations was whether the common heritage of mankind principle should explicitly govern MGRs in the ABNJ. The G77 and China consistently advocated for its application, while developed states maintained that the CHM under the UNCLOS applied exclusively to minerals in the Area ([Bodansky, 2024](#)). Article 7(b) of the BBNJ Agreement enumerates "the principle of the common heritage of humankind which is set out in the Convention" among the general principles guiding implementation, alongside freedom of marine scientific research and equitable resource utilization ([BBNJ Agreement, 2023](#)).

This construction can be characterized as a form of creative ambiguity, a formulation enabling both negotiating blocs to claim partial victory ([Kachelriess et al., 2025](#)). For developing states, the absence of an explicit designation of MGRs as common heritage preserves interpretive space that avoids constraining research and commercial development efforts. Whether this ambiguity will be resolved progressively or conservatively depends substantially on the Conference of the Parties (COP-1) is planned to take place at the UN Headquarters in New York from January 11 to 22, 2027. ([Wysocki et al., 2026](#); [High Seas Alliance, 2026](#)).

Part II introduces a transparency regime that is unprecedented in UNCLOS. Article 12 of the BBNJ Agreement establishes a three-stage notification system: pre-collection, post-collection, and utilization ([Westmoreland et al., 2026](#)). A pre-collection notification must be submitted to the Clearing-House Mechanism as early as practicable, before in situ collection commences, disclosing the nature and purpose of collection, geographic area, research sponsors, and opportunities for participation by researchers from developing states, as regulated in Article 12(2). Post-collection notifications must follow, covering samples collected and repositories in which they are deposited, as stated in Article 12(5). Article 12(3) introduces the BBNJ Standardized Batch Identifier, a unique identifier generated by the Clearing-House Mechanism upon receipt of a pre-collection notification, designed to link physical MGRs samples with their associated Digital Sequence Information (DSI) and enable traceability of genetic material from collection through research and commercial development ([Thambisetty, 2025](#)). The Clearing-House Mechanism serves as a central platform for information exchange and inter-party coordination, representing a significant institutional innovation in global MGRs governance.

Four structural weaknesses limit the extent to which the Agreement can address biopiracy. The first matter concerns retroactivity. Article 10(1) extends Part II obligations to the utilization of MGRs and DSI collected before the Agreement entered into force, but only by default. A Party can opt out simply by filing a written exception under Article 70 when it signs, ratifies, or accedes ([BBNJ Agreement, 2023](#); [Gottlieb et al., 2025](#)). The stakes of opting out are not abstract. For example, of the 12,998 patented MGR sequences identified worldwide, 47% are owned by a single company, BASF. If the home states of those patent holders invoke the Article 70 exception, that entire pool of pre-existing appropriations slips outside the Agreement's reach. The most commercially significant claims would remain exactly where they are ([Blasiak et al., 2018](#)).

Monetary benefit-sharing has been deferred in several layers. Article 14(6) guarantees annual contributions from developed Parties to the Special Fund but caps them at 50 percent of each Party's

assessed BBNJ budget contribution. Substantive payment modalities, milestone payments, royalties, and tiered fees sit under Article 14(7), and they do not exist yet. The COP must adopt these measures. Once it does, Article 14(8) gives any party up to four years to delay implementation. The first biennial review of the system is not due until five years after its entry into force. Stack those lags together, and meaningful monetary flows into the Special Fund are years away, and that is a floor, not a ceiling (Broggiato et al., 2014).

In addition, derivatives are in a definitional grey zone. Article 1(8) defines MGRs as "any material of marine plant, animal, microbial or other origin containing functional units of heredity of actual or potential value" and stops there (BBNJ Agreement, 2023). The definition does not include derivatives, which are biochemical compounds produced through the expression or metabolism of MGRs and the targets of most commercial developments. Read narrowly, these compounds fall outside Part II's benefit-sharing obligations entirely, hollowing out the regime exactly where the commercial value sits (Humphries, 2025).

The BBNJ–ISA relationship remains unresolved. Part II of the BBNJ Agreement and Part XI of UNCLOS apply to the same geographic space, which is the Area, yet the Agreement offers no operational mechanism for coordinating with the ISA on the biological data and DSI generated incidentally during mineral exploration. Article 5(2) directs that the BBNJ be interpreted in a manner that does not "undermine relevant legal instruments and frameworks" which protects formal consistency between the two regimes while leaving operational coordination entirely undefined (Antsygina, 2025).

The BBNJ Agreement is a real advance for the UNCLOS. It builds the first dedicated international regime for conservation and sustainable use of ABNJ. It adds three things that UNCLOS alone could never have provided: traceability, transparency, and institutional infrastructure. However, the limitations above, most of them direct products of the political compromises required for adoption, mean that the Agreement is not, and was never designed to be, a complete answer to biopiracy (Anisimov & Gulyaeva, 2022; Rometius & Wang, 2025). Whether it succeeds will hinge on the COP decisions still ahead on monetary benefit-sharing modalities, the scope of derivatives, and coordination with the ISA. These are exactly the arenas where the negotiating balance between developed and developing states will be tested again (Morgera, 2025). How these questions are resolved in the implementation phase will depend on how the state parties negotiate in the COP. Megadiverse developing states such as Indonesia have the standing to shape this bargaining (Robb, 2023).

3.3. Indonesia and the MGR Framework in BBNJ Agreement

The preceding analysis has mapped the normative terrain, the gaps UNCLOS leaves open, and the partial architecture the BBNJ Agreement constructs in response. The decisive question, however, is not whether the global regime is adequate in the abstract but whether megadiverse developing states can operationalize it in practice. This is where the article's principal analytical contribution begins. Indonesia's post-ratification position offers the most instructive case for examining this question, both because of its dual standing as an MGR custodian and potential user and because the timing of its ratification places it among the earliest movers among megadiverse developing states.

Indonesia ratified the BBNJ Agreement (2023) through Presidential Regulation or *Peraturan Presiden Republik Indonesia No. 67 of 2025*. The question now shifts from whether Indonesia should join to how it can turn membership into a concrete advantage. The rest of this section maps the terrain: Indonesia's strategic position under the MGR regime, the opportunities the Agreement opens, the obstacles to capturing them, and the policy moves that follow the Agreement.

Indonesia occupies a distinctive dual position in global MGR governance. As one of the largest archipelagic states recognized under Part IV of UNCLOS, it stands at the intersection of two interests. On one hand, it is a custodian of MGRs within national jurisdiction, with a direct stake in protection. On the other hand, a potential user of MGRs in ABNJ has an equally direct stake in access (Wartini, 2022; K K & Chalakkal, 2025). Indonesia also sits at the heart of the Coral Triangle, the world's center of marine biodiversity, which adds considerable scientific authority to MGRs governance discourse, not just diplomatic heft (Marwayana, 2022). Along with its strong championing as an active member of the G77

and China, a coalition that played a key role in applying pressure during negotiations to ensure the inclusion of mechanisms for monetary and non-monetary benefit-sharing in the final text of the BBNJ. Few developing states can match the normative credibility and political capital that Indonesia brings to the post-ratification stage.

Indonesia's BBNJ membership opens up three opportunities. The first is access to the global MGR data infrastructure. Once in place, the Clearing-House Mechanism and Article 14 deposit obligations will create a publicly accessible repository of MGR samples and DSI from ABNJ, an infrastructure previously unavailable to institutions without deep-sea expedition capacity (BBNJ Agreement, 2023; Concepción, 2024). The second is the availability of resources of the Special Fund for capacity building and technology transfer. As a developing country Party, Indonesia is eligible to receive support from the Special Fund set up under Article 52 (United Nations, 2025; Lothian & Lee-Brown, 2025). Funding is therefore available immediately through article 14(6) to generate annual contributions from developed country parties, well before any monetary returns are generated to be shared from MGR commercialization. The third is meaningful participation in COP decision-making. Indonesia, as a Party, has the right to participate in the Conference of the Parties, which is expected to address the most consequential questions, the modalities for monetary benefit-sharing, and the implementation rules for the Agreement to the operational interface between Part II and the ISA regime (Brogiato et al., 2025).

There are also at least three structural challenges to the realization of these opportunities. The first issue is the fragmentation of regulations. The obligations contained in the BBNJ Agreement are cross-sectoral, intersecting at least three domestic instruments: Law Number 32 of 2014 on Marine Affairs, Law Number 5 of 1990 on Conservation of Living Natural Resources and Ecosystems, and Law Number 65 of 2024 on Patents. The use of a Presidential Regulation as the ratification instrument, instead of a statute, also raises questions about the Agreement's position within the domestic legal order (Suwartono & Erlangga, 2024). This gap could complicate the enforcement of notification and benefit-sharing obligations against private actors. The second issue is the limited capacity for deep-sea research. Currently, Indonesia lacks dedicated deep-sea research capacity for sustained ABNJ expeditions, and its record of MGRs research remains limited to national jurisdiction waters. Without parallel investment in sequencing facilities and deep-sea biology expertise, access to the data infrastructure of the Clearing House Mechanism risks producing information that cannot be transformed into scientific or commercial outputs. The experience of CCZ-sponsoring states highlights the systemic risk that, in the absence of commensurate domestic capacity, formal membership in international resource governance regimes provides administrative and symbolic benefits while substantive value goes elsewhere (Holst, 2024). The third issue is the lack of coordination among responsible institutions. No permanent institutional framework with a consolidated national focal point has been formally established, although the Ministry of Marine Affairs and Fisheries (KKP) has emerged as the de facto lead implementing agency for BBNJ. The dissolution of the Coordinating Ministry for Maritime and Investment Affairs pursuant to Presidential Regulation or Peraturan Presiden Republik Indonesia No. 140 of 2024 has also removed the inter-ministerial coordination architecture that was previously available for cross-sectoral maritime governance, creating operational risks for timely compliance with notification obligations under Article 12 (Peraturan Presiden Republik Indonesia, 2024).

3.4. Policy Imperatives

The structural challenges identified above require a coordinated response across four interrelated policy dimensions: legal, institutional, technical and diplomatic. Treating these dimensions sequentially rather than separately is essential, as deficits in any one undermine progress in the others.

3.4.1. Legal Harmonisation

The first imperative concerns aligning domestic law with the Agreement's substantive obligations. The obligations under Articles 12 and 14 of the BBNJ Agreement (2023) should be operationalized through the implementation of regulations that bind both public institutions and private actors operating under Indonesian jurisdiction or sponsorship. The current ratification instrument, a Presidential

Regulation, does not create enforceable obligations against private actors and requires supplementation through ministerial regulation or, ultimately, statutory amendment (Suwartono & Erlangga, 2024). In addition, the cross-sectoral intersections among Law No. 32 of 2014 on Marine Affairs, Law No. 5 of 1990 on the Conservation of Living Natural Resources, and Law No. 65 of 2024 on Patents should be reconciled through a consolidated regulatory framework that eliminates jurisdictional ambiguity over MGR access, deposit, and benefit-sharing. Finally, a benefit-recycling mechanism should be established through which proceeds received from the Special Fund are statutorily channelled toward domestic MGR research capacity, thereby preventing diversion to unrelated budgetary priorities.

3.4.2. Institutional Coordination

The second imperative concerns establishing a coherent institutional architecture for BBNJ implementation. A consolidated national focal point should be formally designated to discharge the notification obligations under Article 12 and serve as the principal point of contact with the Clearing-House Mechanism. The National Research and Innovation Agency (BRIN) is structurally appropriate for this function, given its scientific mandate and capacity to manage biological data, although alternative configurations within the Ministry of Marine Affairs and Fisheries (KKP) remain viable. Whichever institution is selected, the designation should be accompanied by formal inter-ministerial coordination mechanisms involving the Ministry of Foreign Affairs (for treaty-related questions), the Ministry of Marine Affairs and Fisheries (for substantive marine policy), and the Ministry of Law (for regulatory drafting). The dissolution of the Coordinating Ministry for Maritime and Investment Affairs pursuant to Presidential Regulation or Peraturan Presiden Republik Indonesia No. 140 of 2024 removed the principal coordination architecture for cross-sectoral maritime governance, and a functional replacement must be established before the first Conference of the Parties (Peraturan Presiden Republik Indonesia, 2024).

3.4.3. Technical and Scientific Capacity

The third imperative concerns building substantive scientific capacity, without which access to international data infrastructure yields no practical benefit. Strategic investment in deep-sea research infrastructure, including research vessels capable of sustained BBNJ operations, sequencing facilities, and bioinformatics capacity, is required to convert access to the Clearing-House Mechanism into independent scientific output. Equally important is the development of human capital through dedicated training programs in deep-sea biology, marine biotechnology, and the legal-technical interface of MGR governance. Article 42 of the BBNJ Agreement (2023), addressing capacity building and the transfer of marine technology, provides a formal channel through which Indonesia may secure international support for these objectives, and the active utilization of this channel should be pursued from the outset (Lothian & Lee-Brown, 2025).

3.4.4. Diplomatic Positioning

The fourth imperative concerns the formulation of a coherent negotiating position for the first Conference of the Parties (COP) and subsequent COP meetings. The National BBNJ Action Plan, currently being prepared by the Ministry of Marine Affairs and Fisheries, should be finalized in advance of COP-1, scheduled for 11–January 22, 2027, with substantive positions articulated on the four arenas identified in Part 3.2: the scope of the Article 70 retroactivity exception, the modalities for monetary benefit-sharing under Article 14(7), the definitional treatment of derivatives, and the operational interface between Part II and the ISA Mining Code. Coordination with the G77 and China, of which Indonesia is an active member, should be pursued to preserve the negotiating coalition that secured the inclusion of benefit-sharing mechanisms in the final text (Concepción, 2024). Equally, leadership within ASEAN, where Indonesia is among the earliest ratifying states, offers a regional platform for harmonizing implementation approaches among Southeast Asian Parties.

3.4.5. Synthesis

Taken together, these four dimensions form an interdependent agenda. Legal harmonization without institutional coordination produces unenforceable obligations, while institutional architecture without technical capacity produces administrative compliance without substantive benefit. Technical investment without diplomatic positioning leaves Indonesia unable to shape the rules under which its capacity operates. Indonesia's implementation challenge is a microcosm of the Agreement's broader paradox: the BBNJ regime transforms MGRs in ABNJ from an unregulated common into a partially governed one, but the transformation of normative entitlement into substantive benefit requires institutional and technical capacities that the Agreement itself does not guarantee. For megadiverse but technologically constrained states, ratification establishes legal standing, and realizing substantive benefits requires domestic investments that the international regime can support but cannot replace.

4. CONCLUSION

This article has advanced the thesis that Indonesia's ratification of the BBNJ Agreement is insufficient to secure substantive benefits from the emerging regime governing Marine Genetic Resources in areas beyond national jurisdiction. This argument was developed in three stages of issue analysis. (1) The permissive treatment of MGRs in ABNJ under UNCLOS, resulting from the mineral boundary of Article 133 and the absence of a benefit-sharing mechanism in Parts XIII and XIV, has set the conditions for the asymmetrical patterns of biopiracy now documented in the CCZ; (2) Part II of the BBNJ Agreement offers a significant normative response, but four structural limitations, such as the retroactivity opt-out, the postponement of monetary benefit-sharing, definitional ambiguity regarding derivatives, and the unresolved ISA interface, curtail its effectiveness; and (3) Ratification through Presidential Regulation or [Peraturan Presiden Republik Indonesia No. 67 of 2025](#) is necessary but not sufficient. The real work lies in the post-COP phase and domestic implementation. Whether the BBNJ regime ultimately corrects or simply formalizes MGR inequities in ABNJ will depend on the choices made in the institutional spaces where developing states like Indonesia must now learn to operate as parties, not just as advocates.

In addition to the aforementioned limitations, this study has three limitations to this journal article. (1) this study's methodology is normative-juridical rather than empirical; (2) the timing of this study is pre-COP and its interpretations are therefore doctrinal and provisional in light of implementation decisions to be taken; and lastly; and (3) because the study was conducted before the first Conference of the Parties, its interpretations remain doctrinal and provisional pending subsequent implementation decisions. Future research should conduct post-COP legal analysis and comparative empirical studies on how G77 States operationalize BBNJ focal points, benefit-sharing mechanisms, and institutional coordination. Future scholarship would benefit from empirical, cross-country studies of how G77 States operationalize their BBNJ focal points, alongside post-COP legal analyses of monetary benefit-sharing modalities, the evolving scope of derivatives, and the operational relationship between Part II of the BBNJ Agreement and the ISA Mining Code.

Ethical Approval

Ethical approval was not required for this study because it employed a normative juridical methodology and did not involve human participants, animal subjects, personal data collection, interviews, surveys, or experimental procedures. The study was conducted through the analysis of legal instruments, policy documents, peer-reviewed literature, and other publicly available secondary sources.

Informed Consent Statement

Informed consent was not applicable because this study did not involve human participants, interviews, surveys, or the collection of personal data.

Authors' Contributions

NIR was solely responsible for the conceptualization of the study, development of the research design, collection and analysis of legal materials, interpretation of the findings, drafting of the manuscript, revision of the article, and approval of the final version for publication.

Disclosure Statement

The author declares that there are no competing interests or conflicts of interest related to this study. No financial, personal, institutional, or professional relationships influenced the design, analysis, interpretation, or reporting of the research findings.

Data Availability Statement

The data supporting the findings of this study are derived from publicly available legal instruments, policy documents, scholarly literature, and institutional sources cited in the manuscript. No new empirical dataset was generated or analyzed during the study.

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Notes on Contributor

Nasywa Intan Ramadhanty

Nasywa Intan Ramadhanty is affiliated with the Faculty of Law, Universitas Gadjah Mada, Yogyakarta. Her research interests include international law, law of the sea, marine biodiversity governance, and environmental law.

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