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Marine Biodiversity Management under the UNCLOS: Scope and Challenges in the era of blue Economy Policy

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Abstract

Developing a governance framework for marine biodiversity, explicitly to Marine Genetic Resources (MGRs) is crucial for the conservation and sustainable use of marine biodiversity. Addressing the challenge of protecting biodiversity in the global ocean requires a sound knowledge and understanding of the complex marine environment with a sound support for ocean governance, including data development and expert consultation, that could also contribute to the UN Decade of Ocean Science for the proposed 2021–2030 Sustainable Development. Future challenges include capacity building and new approaches to incorporate traditional knowledge. Even though the CBD framework put forward a legal framework for the governance of biological diversity from within national jurisdiction, but the issue of biodiversity governance from beyond national jurisdictions remained unaddressed. The United Nations Convention on the Law of the Sea (UNCLOS) framework leaves behind the marine scientific research activities under the 'freedom of high seas' regime, but the international community has become increasingly aware of the growing threats to marine biodiversity in ABNJ and been conferring alternatives to conserve and sustainably use it. UNCLOS proposes to promote sustainable use and conservation of marine living resources especially marine mammals and highly migratory species but specifically silent on marine genetic resources and promotion of marine scientific research in ABNJ for the efficient utilization of resources. UNCLOS lacks modern conservation principles (such as the ecosystem approach and precautionary principle) and conservation tools (such as strategic environmental assessments and marine spatial planning) that is part of achieving sustainable development goals. This paper aims to do critical study of UNCLOS provisions and the international legal principles and economical concepts to bring a balance between competing values, perspectives and interests in the conservation and sustainable governance of marine biodiversity is aimed through this paper.

Keywords: *Areas Beyond National Jurisdiction (ABNJ), Blue Economy, Ocean Economy, Marine biodiversity management, Sustainable Development goals, Sustainability*

Introduction

Marine and coastal biodiversity provides for an instinctive source of economic, social and cultural assets and the livelihood for over 3 billion people contributing to around 2.5% of global GDP and provides employment to 1.5% of the global workforce.[2] Dependence over ocean for food, water, clean energy, and as means to mitigate climate change boosts with time.[3] Human dependence, anthropogenic activities, and impacts of climate change all lead to decline in ocean

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[2] OECD, *The Ocean Economy in 2030*, OECD Publishing Paris, (2016), https://doi.org/10.1787/9789264251724-en. (July 2, 2022, 9:29 PM)

[3] Duarte, C.M. et al., *Will the Oceans Help Feed Humanity?*, 59 BIOSCIENCE 967, 968- 969 (2009).

resources, productivity and marine biodiversity.[4] The conflict among mounting human reliance on ocean resources and waning marine life under human pressure is focusing on the exceptional attention to the connection between ocean conservation and human well-being.[5] The ocean economy is growing as commercial use of the ocean accelerates, while progress toward achieving international goals for ocean conservation and sustainability is lagging.[6] National marine policies for maritime areas and resources by sovereign states are getting focused on assimilating economic activities recognizing it as 'ocean economy' to gather maximum benefits from their maritime areas. The projected growth rate from 2010 to 2030 for the ocean economy is much higher than the global economy[7] is expecting to contribute to widespread targets among coastal and inland states through an unprecedented era of blue growth.[8,9] Scientific and technological advancements have a crucial role to play in development of ocean based economic and scientific activities.[10] The technologies, at the same to time be able to address the ocean related environmental challenges prevailing over the marine biodiversity, habitats and the ecosystem.

The definition proposed by the Organization for Economic Co-operation and Development (OECD) defines ocean economy as "the sum of the economic activities of ocean-based industries, and the assets, goods, and services of marine ecosystems", and has presented the concept as a lens through which to view the diverse industries that share the ocean.[11] The 'ocean economy' relate collectively to ocean based industry activities and the assets, goods, and services from marine ecosystems, in particular marine biodiversity.[12] The expected growth rate in ocean economy is the result of industrialization, privatization of ocean goods and issues like non-recognition of traditional knowledge holders, and inequitable sharing of benefits are getting elevated to international platforms for a way out.[13] Unregulated and disproportionate access to marine resources leading to loss and damages to marine fauna and flora is an apprehension in managing marine biodiversity, especially those from ABNJ.[14] Marine biodiversity provides natural capital inputs that combine with produced and human capital to underpin the ocean economy.[15] Sustainable exploitation oriented towards reduced impacts over ecosystem associated with higher economic growth. At the same time, the focus is to evolve climate friendly resource efficient technologies supported by governmental frameworks to provide better incentive to

[4] Duarte, C. M. et al., *Rebuilding marine life*. 580 (7801) NATURE 39, 39-40 (2020).
[5] Lubchenco, J. & Grorud-Colvert, K. *Making waves: The science and politics of ocean protection*, SCIENCE 350, 382-383 (2015).
[6] J. Virdin et. al, *The Ocean 100: Transnational corporations in the ocean economy*, 7(3) SCIENCE ADVANCES, (2021). https://doi.org/10.1126/sciadv.abc8041.
[7] Supra note 1.
[8] Jean-Baptiste Jouffray et al, *The Blue Acceleration: The trajectory of human expansion into the ocean*, 2(1) ONE EARTH 43, 43- 44 (2020).
[9] Michelle Voyer et.al, *Shades of blue: What do competing interpretations of the Blue Economy mean for oceans governance?* 20(5) J. ENVIRON. POLICY PLAN 595, 598 (2018).
[10] Supra note 1.
[11] Supra note 1.
[12] PATIL PG ET. AL, TOWARD A BLUE ECONOMY : A PATHWAY FOR BANGLADESH'S SUSTAINABLE GROWTH, (World Bank 2018). Accessed July 3, 2022. https://openknowledge.worldbank.org/handle/10986/30014
[13] Michelle Voyer et.al, *Supra* note 8, at 2.
[14] D. J. McCauley et.al, *Marine defaunation: Animal loss in the global ocean*, 347(6219) SCIENCE, (2015). https://doi.org/10.1126/science.1255641
[15] Nathan. J. Bennett et. al, *Towards a sustainable and equitable blue economy*, 2(11) NATURE SUSTAINABILITY 991, 991-993 (2019).

marine economy and meeting the environmental standards.[16]ABNJ forms the majority of ocean space that lies beyond national jurisdiction, where many resources are held in common and where UNCLOS governance regime over marine biodiversity is fragmented.[17]

International commitments like UNCLOS, Agenda 21 of the 1992 United Nations Conference on Environment and Development, and UN 2030 Agenda for sustainable development aims to achieve sustainable ocean usage taking in to account both environmental and social scope in addition to future of ocean economy. United Nations Sustainable Development Goal 14 (SDG 14) aims to "conserve and sustainably use the oceans, seas and marine resources".[18] Only through rebuilding the life support systems for a healthy ocean is a challenging task, especially those in ABNJ. Since those areas are beyond any sovereign limits and regulatory rule. On one hand, when global economies focus on to gather the scope of marine economy, while on the other hand, the world is aware of the need of sustainable exploitation and negotiating for a treaty framework for the sustainability of marine realm and to safeguard the marine biological diversity of ABNJ.[19]

The only international legally binding instrument that comprises specific provisions for resources from ABNJ is the UNCLOS. UNCLOS accepted the inevitability of addressing the interconnected issues that gyrate around the marine areas and it calls for an international co-operation in matters related to governance.[20] It also recognized the sovereignty of all States, the necessity of a legal order for the seas and oceans to facilitate international communication through freedom of navigation.[21] It was anticipated that such legal instruments would help achieve goals that contribute to the realization of a just and equitable international economic order which takes into account the interests and needs of mankind as a whole and, in particular, the special interests and needs of developing countries, whether coastal or land-locked.[22] The scope and challenges with the UNCLOS provisions in the light of other international legal principles and other initiatives to bring a balance between competing values, perspectives and interests in the conservation and sustainable governance of marine biodiversity is essential in achieving the ultimate objective.

Biodiversity management under the UNCLOS

UNCLOS, established as the international instrument for legal order that facilitate international cooperation and promote coordination among the states parties applicable on marine areas. Irrespective of their geographical location, parties were obliged to converse the rights and obligations vested on them including all the rightful activities that could assure the protection and preservation of the marine environment through peaceful use of marine resources and

[16] Everett, Tim, et al, *Economic growth and the environment*, MPRA PAPER NO. 23585, (2010). Accessed July 2, 2022. https://mpra.ub.uni-muenchen.de/23585/

[17] Jennifer.J. Silver et. al, *Blue economy and competing discourses in international oceans governance*, 24(2) J. ENV. DEVELOP 135, 147 (2015).

[18]*Sustainable Development*, United Nations, Department of Economic and social Affairs, Accessed July 1, 2022, https://sustainabledevelopment.un.org/sdg14.

[19] Jennifer.J. Silver et. al, Supra note 16, at 3.

[20] D. Pyć, *Global ocean governance*, 10(1) TRANSNAV: INTERNATIONAL JOURNAL ON MARINE NAVIGATION AND SAFETY OF SEA TRANSPORTATION 159, 160- 161 (2016).

[21] United Nations Convention on the Law of the Sea, 1982 §PREAMBLE.

[22] John E. Noyes, *The Common Heritage of Mankind: Past, Present, and Future*, 40 DENV. J. INT'L L. & POL'Y 447, 452- 454 (2012). Content downloaded/printed from Hein Online (http://heinonline.org) Fri Jan 3 12:04:37 2014

areas.[23] The provisions are clear and specific on the rights and obligations of every coastal and land locked states with respect to the activities carried out in the ocean. It also demands the conservation and preservation of resources and the ecosystem and demands the states to take appropriate measures envisaged through UNCLOS.[24] Ocean governance under UNCLOS relates to the regulation of activities in high seas and international seabed 'the area' excluding the territorial waters of nations.[25] It becomes more important once the biological diversity and potential of the resources procured from the marine areas beyond national jurisdiction. Eventhough there are explicit provisions for the protection of marine resources, an explicit provision that sets forth the regulation of exploration and exploitation of 'high seas' resources is absent in the UNCLOS.[26]

There are a number of existing international agreements including regional agreements for the governance of resources from ABNJ, even then UNCLOS remains the only allencompassing instrument, but it lacks a lucid governance mechanism.[27] Resources being beyond the mention of any single government to protect, they are subject to overexploitation, pollution and habitat degradation, which together are undermining vital earth support systems.[28] These remote areas of the oceans are rich in biodiversity and resources, and play a critical role in ecosystem services such as oxygen production and carbon storage. Since ABNJ make up nearly two thirds of the global ocean (about 45% of the Earth's surface**),** this is of particular significance to the health of the planet. The waters beyond national limits, the ABNJ are difficult to manage with few laws to promote their protection. The existing laws are often weak and poorly enforced or the issues are much wider to get it addressed.[29]

Whether the principles and approaches under UNCLOS is applicable to marine biodiversity from ABNJ?

The principle adopted in the UNCLOS is the 'Common Heritage of Mankind' (CHM) for the governance of the resources from 'area'.[30] The 'resources' as defined in UNCLOS is, "resources means all solid, liquid or gaseous mineral resources in situ in the Area at or beneath the seabed, including polymetallic nodules".[31] The constricted definition of the resources has led some to posit that the common heritage of humanity regime does not apply to MGRs.[32] UNCLOS is not specific on governance of marine living resources and it needs clarity on the applicability of

[23] Taisaku IKESHIMA, *The Implementation Mechanism of the United Nations Convention on the Law of the Sea (UNCLOS): A General Overview*, 73 WASEDA GLOBAL FORUM, 80- 82 (2012).

[24] Robert Beckman and Tara Davenport, *The EEZ regime: reflections after 30 years*, 27 In LOSI Conference papers, 6- 11 (2012).

[25] TILADI D, OCEANS: THE NEW FRONTIER–A PLANET FOR LIFE 101- 104 (TERI Press 2011).

[26] Anila Premti, *Conservation and Sustainable Use of Marine Biodiversity of Areas Beyond National Jurisdiction: Recent legal developments*, Article No. 25 UNCTAD TRANSPORT AND TRADE FACILITATION NEWSLETTER N°80 - FOURTH QUARTER, (2018).Accessed on July 2, 2022. https://unctad.org/news/conservation-and-sustainable-use-marine-biodiversity-areas-beyond-national-jurisdiction-recent

[27] D. Pyć, *supra* note 19, at 4.

[28] Lee A. Kimball, *International Ocean Governance: Using International Law and Organizations to Manage Marine Resources Sustainably*, International Union for Conservation of Nature and Natural Resources, 25- 30 (2003).

[29]*Supra* note. at 45- 47.

[30] *Supra note* 20, §Artice 133, Part XI.

[31] *Id*

[32] LYLE GLOWKA, EVOLVING PERSPECTIVES ON THE INTERNATIONAL SEABED AREA'S GENETIC RESOURCES: FIFTEEN YEARS AFTER THE "DEEPEST OF IRONIES", LAW, TECHNOLOGY AND SCIENCE FOR OCEANS IN GLOBALISATION 401-402 (Brill | Nijhoff 2010). https://doi.org/10.1163/ej.9789004180406.i-610.132

principles for MGRs from ABNJ.[33] The UNCLOS mentions about living organisms on conservation aspect and the need for international cooperation is recognized through it. There is no specific mentioning on sustainable use, benefit sharing, and, conservation of potential biological or genetic resources from ABNJ in UNCLOS text. [34]

The elements of CHM principle in relation with biodiversity management include reservation of the area in question for peaceful purposes, protection of the natural environment; and equitable sharing of benefits associated with the exploitation of the resources in question, paying particular attention to the interests and needs of developing states; and governance through a common management regime.[35] Prohibition of acquisition of, or exercise of sovereignty over, the area or resources in question and vesting of rights over the resources in question with humankind as a whole are again elated to biodiversity management, but not in specific terms or could be incorporated for benefit sharing. The UNCLOS provisions are not adequately addressing the marine scientific research carried out for commercial purposes and research that does not have direct commercial potential or is not suitable for commercial exploitation need addressed and distinguished properly through any provisions of UNCLOS.[36] It covers only the marine scientific research activities carried out and the scientific research mentioned could be applicable to MGRs located in the Area and thus govern bioprospecting carried out in the Area, but not in the water column. Similarly, Article 135 of UNCLOS states that the legal status of the waters superjacent to the Area and of the air space above those waters should not be undermined by the regime created by Part XI.[37]

Challenges under the UNCLOS for biodiversity management

UNCLOS mandates biodiversity management through resources, species, activity, and region specific activities that are implemented through regional management organizations and programmes.[38] Universal, regional or sub regional organizations or mechanisms are established under UNCLOS to respond to the differing circumstances and needs of respective regions.[39] It include regional seas programmes and regional fisheries management organizations that deliver the functions of governs activities of regional interests, whereas sector specific activities are

[33] The negotiations proceed and there is clear conflict between the developed and developing nations on the applicability of the CHM. Developing countries demand for the retention of CHM in the BBNJ also and to extend it for the sustainable use of living resources i.e, MGRs and MGRTK from ABNJ so as to assure benefit sharing as envisaged for deep sea mining carried out under the ISA. Developed nations asks for 'freedom of high seas' as recognized in UNCLOS for marine scientific research, that does not demand benefit sharing for the use of, especially commercial benefits from the use of MGRs- resources.

[34] Elisabeth Druel et.al, *Getting to yes? Discussions towards an implementing agreement to UNCLOS on biodiversity in ABNJ*, POLICY BRIEF IDDR, 2-4 (2013).

[35]Arvid Pardo, Letter from the Permanent Rep. of Malta to the United Nations to the Secretary- General, U.N. Doc. A/50/142, 57- 60 UN Doc. AIC, 1/PV. 1515, (November 1967).

R.P. ANAND, COMMON HERITAGE OF MANKIND: MUTILATION OF AN IDEA, 189-191 INDIAN J. INT'L L, (Brill | Nijhoff 1997). https://doi.org/10.1163/9789004480285_008.

[36] Even though Part XIII of UNCLOS deals specifically on marine scientific research, any of the provisions does not expressly regulate or manage activities involving marine biodiversity.

[37] *Supra note* 20, §Article 135 on the legal status of the superjacent waters and air space states that "[n]either this Part nor any rights granted or exercised pursuant thereto shall affect the legal status of the waters superjacent to the Area or that of the air space above those waters."

[38] *Supra note* 20, §Article 311, UNCLOS states that any negotiations over international agreements and coordination between treaties must consider general provisions of the Law of Sea,

[39] KAWANO, M, *Implementation of the Rules of the UNCLOS through Universal and Regional Organizations* GLOBAL CHALLENGES AND THE LAW OF THE SEA, 18- 24 (Springer, Cham 2020).

managed by organizations like International Maritime Organisation, International Seabed Authority, International Whaling Commission etc that extend to ABNJ are established under UNCLOS.[40] However, the independent existence and functioning of those establishments devoid of an overarching framework to coordinate consistency and coherence among the organizations made the biodiversity management difficult.[41] In short, UNCLOS was set as the legal instrumental framework that help bring coherence and consistency into the existing fragmented governance system that encourage the development of regional conservation agreements and give an explicit mandate to existing institutions to coordinate their activities and cooperate for the maritime areas and the resources under the UNCLOS framework.[42] LOSC remains the only international legal framework that address all the matters relating to the use and protection of marine environment, eventhough the provisions are inadequate to address them all.[43]

UNCLOS for Ocean Economy, Blue Economy and Marine Biodiversity Management Challenges

The international legal principles and economical concepts related to marine biodiversity.

The absence of clear definitions to the terms ocean economy, blue economy and marine economy does not prevent the terms being used for marine bioprospecting activities that support sustainable and healthy life supplement including fisheries resources through enhanced mariculture, nutraceuticals and pharmaceuticals from marine resources in addition to the conventional maritime economically beneficial activities including tourism, renewable and non-renewable energy resources, fisheries and tourism.[44] The United Nations proposed a general definition to 'Blue Economy' as an ocean economy that aims at 'the improvement of human well-being and social equity, to reduce environmental risks and ecological scarcities.'[45]

UNCTAD observes that the promotion of economic growth through social inclusion will assure promote the life and living of the concerned communities, is achieved through assured sustainability of the associated ecosystem and the biota as a whole.[46] In practice, ocean economy is considered sustainable only when the marine ecosystems could hold out the pressure of economic activities over it and when a balance is achieved and maintained with respect to the capacity of the ocean areas and resources in question in a manner to support all those activities and stay healthy and resilient and so the concept of 'blue economy.' The blue economy aims to combine environmental sustainability and economic value, designed within governance policies

[40] *Id.*

[41] Tladi D., JACQUET P., PACHAURI R., TUBIANA L. (EDS), "OCEAN GOVERNANCE: A FRAGMENTED REGULATORY FRAMEWORK" IN OCEANS: THE NEW FRONTIER – A PLANET FOR LIFE 102- 103 (Teri Press 2011).

[42] Robin Churchill, *The LOSC regime for protection of the marine environment–fit for the twenty-first century?*, RESEARCH HANDBOOK ON INTERNATIONAL MARINE ENVIRONMENTAL LAW 3, 3-4 Edward Elgar Publishing. (2015).

[43] *Id*. at 5- 7.

[44] Rosa María Martínez-Vázquez, *Challenges of the Blue Economy: evidence and research trends*, 33(1) ENVIRONMENTAL SCIENCES EUROPE 1, 3-4 (2021). https://doi.org/10.1186/s12302-021-00502-1

[45] *United Nations Blue Economy Concept Paper*, (2014). https://sustainabledevelopment.un.org/index.php?page=view&type=111&nr=2978&menu=35

[46] *The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries*, World Bank and United Nations Department of Economic and Social Affairs, World Bank Washington DC, (2017).
Smith-Godfrey S, Defining the blue economy, 12(1) MARITIME AFFAIRS: JOURNAL OF THE NATIONAL MARITIME FOUNDATION OF INDIA 58, 59-62 (2016).

and growth models.[47] It proposes and takes in to account the distinctiveness of socioeconomic development in the course of ocean related regions and activity from environmental and ecological deprivation.[48,49] World Bank defines the term 'blue economy' to denote the activities that assure the sustainability of marine resources and the associated ecosystem during the execution of marine economy policies and related economic activities that take advantage of the resources and the marine environment.[50]

Blue economy is not a single player game, but involves the participation from different stakeholders like research institutes, governments, regional consortium working for marine areas, multilateral organizations, private and public sector institutes including academic institutions, local communities and even activist groups in their respective regions.[51] UNCLOS Framework does not support capitalism at marine areas and resources and it is difficult to solve the contradictions at sea.[52] Some scholars, practitioners, and policy-makers have used the term 'blue economy' synonymously, to summarize international interest in ocean-based fiscal growth. In the global initiatives headed to achieve Sustainable Development Goals and SDG 14 in particular- "life below water"- aims to promise the protection and sustainable use of oceans and the inherent resources of the marine realm.[53] SDG 14 focus on to achieve associated targets for reducing overfishing and pollution, addressing ocean acidification and securing access for small-scale, the same vision that was envisaged under the UNCLOS frame work.[54] Slow progress in ocean conservation and sustainable use is also expected to have detrimental implications for achieving other international policy goals, such as ending poverty and hunger (SDGs 1 and 2, respectively).[55] The challenges that were realized in implementing UNCLOS were getting addressed under the concepts of SDGs and 'blue economy' concepts for the marine areas.[56]

Blue economy and Marine biodiversity Management Challenges under UNCLOS

[47] Michelle Voyer et. al, *Shades of blue: what do competing interpretations of the Blue Economy mean for oceans governance?*. 20(5) JOURNAL OF ENVIRONMENTAL POLICY & PLANNING 595, 610- 614 (2018).

[48] Pia Frederiksen et.al,, *Proposing an ecosystem services-based framework to assess sustainability impacts of maritime spatial plans (MSP-SA)*, 208 OCEAN & COASTAL MANAGEMENT (2021).

[49] *Investing in the SDGs: An Action Plan*, UNCTAD UNITED NATIONS PUBLICATION, World Investment Report (2014). https://unctad.org/system/files/official-document/wir2014_en.pdf

[50] *The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries*, World Bank and United Nations Department of Economic and Social Affairs, World Bank, Washington DC, (2017).

[51] Ki- Hoon Lee, *Blue economy and the total environment: Mapping the interface*, ENVIRONMENT INTERNATIONAL, 157 (2021).

[52] Felix Mallin, *Awash with contradiction: capital, ocean space and the logics of the Blue Economy Paradigm*, GEOFORUM 113, 121-132 (2020).

[53] Patil, PG, *Toward A Blue Economy: A Promise for Sustainable Growth in the Caribbean, An Overview*, THE WORLD BANK, WASHINGTON D.C, (2016).
https://www.globalgoals.org/goals/14-life-below-water/

[54] Elisabeth Druel, *Sustaining marine life beyond boundaries: options for an implementing agreement for marine biodiversity beyond national jurisdiction under the United Nations Convention on the Law of the Sea*, MARINE POLICY 49, 90-97 (2014).

[55] SDG 1 for no poverty and SDG 2 for zero hunger. Through sustainable utilization and exploitation of resources, the interrelated objectives of the SDGs could be achieved. Through participating IPLCs for conservation activities, poverty eradication through assured income is promised. At the same time, sustainable utilization of resources will prevent biodiversity loss resulting in food security for the world, since the marine areas have immense scope for food production through maritime aquaculture practices. https://sdgs.un.org/goals

[56] CLEVER MAFUTA, MAKING THE BLUE ECONOMY HAPPEN. IN THE BLUE ECONOMY IN SUB-SAHARAN AFRICA, 249-250 (ROUTLEDGE 2021).

There are many interrelated issues in achieving the blue economy goals and it include deciding the sustainability levels in fisheries sector to pollution, and even in limiting the exploitation and usage levels for various other resources and to access the maritime areas.[57] Through regional or international cooperation and collaboration among state parties, taking in to account the priorities and interests like to increase economic benefits for technologically incapacitated states parties to access and make the best use of resources like SIDS and LDCs, the objectives of the concept could be improved.[58] Sustainable marine uses has positive relationships between ecosystems and also will eliminate overfishing, illegal and destructive fishing practices is a necessary pre-condition for achieving the largest number of other SDG targets.[59]

Ocean based industries, both commercial exploitation including bioprospecting and other economically significant activities like commercial exploitation of fishery resources, tourism, and maritime transportation, and other budding activities, such as offshore renewable energy, aquaculture, deepsea mining and associated marine scientific research over the biological resources from the deepsea bed and all such will come under the various wings of the blue economy concept.[60] States parties compromise on commodification and valuation of biodiversity, but increased conflicts are there in deciding the limits for carbon-intensive industries like oil and gas, and the emerging industry of deep seabed mining especially among the developing, SIDs, LDCs and CARRICOM countries. It is necessary to gaze beyond the traditional approaches and advanced methods to make the regions and communities safe and sustainable.[61]

The "blue economy" concept not only seeks to uphold financial escalation, societal insertion, and the safeguarding or progress of livelihood of maritime industries and coastal people but also promise ecological sustainability of the oceans and coastal areas.[62] On one hand when it assures socioeconomic development, the impact of increased anthropogenic activities for environmental degradation and loss of marine biodiversity also needs to be addressed. The issues are already foreseen under the UNCLOS and the need for collaboration to prevent all activities to maintain the health of ocean systems could be read out from the LOSC provisions. What was lacking was a strong institutional mechanism that assures collaboration and monitors the activities carried out in the ABNJ. The barrier to address the same was the principle of 'freedom of high seas', that was adopted approach to carryout marine scientific research, and other activities were permissible as per the UNCLOS provisions, but no specific provision to regulate all other activities.

Why biodiversity management calls for collaboration among the parties?

To realize the goals, necessitate re-establishment of the marine life-support processes that bring the various returns the society receives from a healthy ocean; all the activities need to be coordinated. The recovery of marine populations, habitats and ecosystems following past conservation interventions is best proposed through the 'blue economy policy' and 'sustainable development goals.' Recovery rates across studies suggest that substantial recovery of the abundance, structure and function of marine life could be achieved by 2050, if major pressures-

[57] *Supra note* 50 at 9.
[58] Gerald G Singh et.al, (2018). A rapid assessment of co-benefits and trade-offs among Sustainable Development Goals, 93 MARINE POLICY 223, 225-226 (2018).
[59] *Id*. 228.
[60] *Supra note* 45 at 8.
[61] *Supra note 55* at 10
[62] *Supra note 57* at 10.

including climate change- are mitigated. Rebuilding marine life represents a doable grand challenge for humanity, an ethical obligation and a smart economic objective to achieve a sustainable future. The areas of governance were recognized for activities in which ocean were recognized as natural capital to initiate research and development or other activities, source of livelihood through small scale fishing, and marine areas and resources as good business that are integral to SIDS.[63]

The role played by healthy marine areas in poverty eradication, and food security contributing to the sustainable future of SIDS, that is achieved through internal collaboration among the parties.[64] Environmentally sustainable financial development from marine resources will help address the challenges of resource depletion that helps result in poverty eradication, job creation, and to address the challenges of global warming which results in climate change.[65] Sustainability of marine ecosystems and that are related to 'blue economy' may vary with sector, areas, and the conditions required for developing the same.[66] The policies and strategies may vary with national circumstances, maritime zones, current practices and scope of development and potential for the industry and the area, and issues allied with capacities and exclusive environmental, social, and cultural conditions.[67]

The varied ocean related sectors like fisheries, aquaculture, tourism, maritime transport and infrastructure will be impacted by results of climate change, pollution and ocean acidification and it remains a challenge for the sustainable use of marine resources.[68] To address the overarching and related issues could be resolved only through international, regional, sub regional or sector specific collaborations and is recognized in achieving the SDGs, the new treaty negotiated under the UNCLOS for the conservation and sustainable use of marine biological diversity from ABNJ,[69] and the blue economy policies of different nations. The effective implementation of the UNCLOS is a vital for the promotion of the blue economy concept worldwide. In short, the effective implementation of the Convention, its implementing Agreements and other relevant instruments is essential to build robust legal and institutional frameworks, including the ocean related industries.[70] Keeping UNCLOS as the umbrella treaty for the sustainable utilization, exploitation and conservation of all the resources from marine areas in particular from ABNJ, will help achieve the objectives including the sustainable marine areas and the resources, since the other ocean areas are under national sovereign limits.

What is best to foster sustainable ocean economy and the UNCLOS?

Damage to ocean ecosystems will deteriorate the growth of ocean economy, and hence will influence the future growth of the global economy. As companies and governments compete to make the most of from marine resources, substantial threat can crop up for people and the

[63] *Supra note* 16 at 3.
[64] *Supra note* 16 at 3.
[65] *Supra note* 50 at 9.
[66] *The blue economy: Growth, opportunity and a sustainable ocean economy*, Unit E I (2015). https://www. eiuperspectives. economist. com/sustainability/blue-economy/white-paper/blue-economy. Accessed June, 19, 2022.
[67] *Id.*
[68] David Le Blanc, Mapping the linkages between oceans and other Sustainable Development Goals: a preliminary exploration, 149 DESA Working Paper, 2-3 (2017).
[69] Jessica L. Blythe et.al, *The Politics of Ocean Governance Transformation*, FRONTIERS IN MARINE SCIENCE, 4-6(2021). https://doi.org/10.3389/fmars.2021.634718
[70] *Supra note* 52 at 9.

environment.[71] Policies to address and reduce this risk may also help countries prepare for the impacts of external drivers of change in an ocean economy, such as climate change. The important aspect to be taken into account for the management of biodiversity and other related activities in a sustainable and responsible manner is international cooperation with supreme priority.[72] International cooperation helps stimulate innovation and boost up the sustainable development of ocean economy. The relevance of international cooperation is already envisaged under the UNCLOS to regulate various species specific and area specific activities and as a safeguard from pollution for the protection of marine areas and the conservation of marine resources.[73]

Through strengthening integrated ocean management by incorporating economic analysis and involving economic tools, sustainable ocean economy will be achieved.[74] There is an escalating requirement for the adoption of a holistic, ecosystem-based and knowledge-based approach to addresses confronts in management, ensure sustainability and flexibility of marine ecosystems with precise elucidation to launch international platforms for the sharing of knowledge, experience and best practice, to evaluate the economic effectiveness of public investment in marine research and observation.[75] Improve the statistical and methodological base by integrating different data and knowledge sources such as biophysical, social, cultural, and economic data at national and international level for measuring the scale and performance of ocean-based industries and their contribution to the overall economy.[76] This could include, among other tasks, the further development of the OECD's Ocean Economy Database.[77] Build more national and international capacity for ocean industry foresight, including the assessment of future changes in ocean-based industries.[78] The other important elements that contribute to blue economy like conservation, sustainability, and energy extractive segments aims to solve capitalist crises over the global ocean economy.[79] Achieving the SDG 14 will require rejuvenation of the marine life as life - support systems for populations, habitats, and ecosystem to deliver the many benefits society receives from a healthy ocean. Policy structure for the marine biodiversity management ion the light of provisions laid down by the UNCLOS is thus becoming the crucial element in achieving the proposed objectives from the 'blue economy' for the ocean economy thus contributing to the overall global economy.

Conclusion

The need and initiatives towards marine biodiversity management evolved from the realization that humanity cannot persist and ensure the human imposed alterations or damages to the ocean ecosystems. In the era of getting more acceptance and preference for blue economy, there is increased awareness on the conservation and sustainable utilization of marine biological

[71] Nathan James Bennett et.al, Blue *growth and blue justice: Ten risks and solutions for the ocean economy*, 125 MARINE POLICY, 1 (2021).
[72] *Id.*
[73] *Id. at note 33.*
[74] Jan Gunner Winther et.al, *Integrated Ocean management for a sustainable ocean economy*, 4(11) NATURE ECOLOGY & EVOLUTION 1451, 1453-1454 (2020).
[75] Michelle Voyer, *Achieving comprehensive integrated ocean management requires normative, applied, and empirical integration*, 4(7) ONE EARTH1016, 1018 (2021).
[76] *Supra note* 74 at 13.
[77] *Supra note* 70 at 13
[78]*Supra note* 70 at 13.
[79] Zoe W. Brent et.al, *The Blue Fix: Unmasking the politics behind the promise of blue growth*, TRANSNATIONAL INSTITUTE 1, 5 (2020).

diversity with limited risk of damages to ecosystem and resources. UNCLOS continued to play a fundamental role in the development of international law, and in the promotion of peace, security, cooperation, friendly relations among all nations, and sustainable development of the ocean and sea. Since its inception, UNCLOS has laid the foundation of ocean governance, with the first single set of rules for our ocean and seas. More than 40 years to the adoption of UNCLOS, the question raised by the international community on whether it succeeded in achieving the ambitious goals, especially those relating to managing the marine biodiversity from ABNJ. Over the past decades, the international community has become more and more aware of the increasing threats to ABNJ, e.g. overexploitation of fish stocks, use of destructive fishing practices, ocean acidification, pollution of the marine environment and emergence of threats linked to deep-sea mining or geo-engineering activities. When UNCLOS was drafted, the world lacked the technological capacity and scientific knowledge to understand the biological and economic value of marine genetic resources (MGRs) and the only economically profitable resources in areas beyond national jurisdiction (ABNJ) were the minerals from the deep seabed. The issues need to be addressed with due regard for the sovereignty of all States. The provisions of UNCLOS helped achieve some of the goals and contributed to the realization of a just and equitable international economic order. UNCLOS accounted and addressed the interests and needs of mankind as a whole and, in particular, the special interests and needs of developing countries, whether coastal or land-locked by deciding the sovereign limits to 200 nautical miles. UNCLOS gave clarity on many issues regarding sovereignty limits and activities allowed in territorial waters as per the convention. The major gap in UNCLOS with regard to MGRs from ABNJ is, it does not contain any provision explicitly regulating MGRs derived from ABNJ.

Marine biodiversity and bioprospecting are not explicitly covered by UNCLOS as they were relatively new concepts at the time the Convention was negotiated. The issue of what to do with MGR outside territorial waters is not addressed properly. UNCLOS lacks modern conservation principles (such as the ecosystem approach and precautionary principle) and conservation tools (such as strategic environmental assessments and marine spatial planning) that is part of achieving sustainable development goals. It lacks rules for unregulated activities affecting biodiversity (such as bioprospecting, and high seas aquaculture). Since UNCLOS does not address the issue on MGRs, it does not cover benefit sharing aspects on the benefits derived from the use of MGRs from high seas and the area. UNCLOS recognizes the importance of global and regional cooperation with regard to the marine environment, which has a significant role to play in the successful execution of the ‘blue economy’ objectives. Even though UNCLOS may feel insufficient for the governance of marine biodiversity from high seas and the area, the provisions envisaged through UNCLOS has scope of getting adopted in the new Treaty negotiations for MGRs from ABNJ. Keeping the UNCLOS framework as the umbrella convention will add on to the interlinked programmes for sustainable use of marine biological diversity and other resources like SDGs and ‘blue economy for ocean and global economy.