P-ISSN: 2987-8071| E-ISSN: 2987-8063| DOI: https://doi.org/10.53955/jsderi.v2i1.23
Journal of Sustainable Development and Regulatory Issues (JSDERI)
http://journal.contrariusactus.com/index.php/JSDERI/index

| Research Article |

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Strengthening Blue Economy Policy to Achieve Sustainable Fisheries

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Received: August 15, 2023/ Revised: November 2, 2023/ Accepted: January 26, 2024.

Abstract: Particularly in developing nations, the aquaculture and fisheries sector is vital to the nutrition and food security of the global population. Nevertheless, notwithstanding their substantial social and economic potential, fishery resources are susceptible to overexploitation and hurting the environment. This research assesses the significance of bolstering blue economy policies to enhance sustainable maritime policies. This study employs the methodology of normative legal research. The research findings, the deterioration of ecological equilibrium, as evidenced by the diminishing carrying capacity of the sea, can be attributed to conservation efforts that lack a stronger emphasis on sustainable management. Maintaining the fundamental tenets of equitable and sustainable fisheries management in nations endowed with oceans is paramount. State and government policies toward society and distributive equity are inextricably linked in managing fisheries resources; local governments may be entrusted with autonomous design and assistance responsibilities for these policies. As a result, a revised vision for constructing a sustainable, equitable, and ambitious blue economy is proposed. Promoting resource-based economic development in the marine and fisheries industrial sector while preserving coastal environments and marine resources through the blue economy concept is possible. This vision is founded upon the following five governance principles: inclusive and equitable processes, climate stability, sustainable consumption and production, circular processes, and the promotion of healthy ecosystems.

Keywords: Blue Economy; Marine Fisheries; Sovereign;

INTRODUCTION

The Almighty God exclusively created the earth, water, the natural resources contained therein, and space for the benefit of humanity. Individuals throughout history, individuals present, and individuals of the future. The enjoyment, utilization, ownership, and control of these extraordinary natural resources are essential for those endowed with them. Nevertheless, alongside the entitlement to appreciate these bestowments, humanity must also preserve and uphold the integrity of extant natural resources[1]. The development of the economy depends on a richness of accessible natural resources. Countries might make significant revenues from the extraction of Natural resources, which could be used to fund different economic programs[2].

A consciousness regarding the significance of conserving natural resources was reaffirmed by the World Commission on Environment and Development (WCED)

[1] Zainul Akmal, 'Existence of Indigenous Peoples in Law Related to the Environment', *Proceedings of the 2nd Riau Annual Meeting on Law and Social Sciences (RAMLAS 2021)*, 659.Ramlas 2021 (2022), 152–57 https://doi.org/10.2991/assehr.k.220406.037

[2] Jia Wang and Guixian Tian, 'Driver or a Barrier to the Economy: Natural Resources a Blessing or a Curse for Developed Economies?', *Resources Policy*, 87 (2023), 104331 https://doi.org/10.1016/j.resourpol.2023.104331

over thirty years ago. Aquaculture expansion has contributed positively to global food and nutrition security by enhancing world fish supplies and mitigating the decline in fish output from capture fisheries to meet the rising fish demand[3]. The international community will encounter formidable challenges in its endeavor to guarantee food and necessities for approximately nine billion people. To ensure global food security and sustenance, especially in developing countries, aquaculture and fisheries are deemed vital sectors by the FAO. Thus, besides considerably contributing to food security and the global economy, marine and inland fisheries will possess exceptional capabilities to meet future protein (animal) demands. Notwithstanding the substantial social and economic prospective value, environmental degradation and overexploitation (overfishing) are presently leading to adverse effects on fisheries resources.)[4].

The regulation of responsible and sustainable fisheries management has been mandated and rendered foundational by international legal instruments. Coastal nations are required to conduct fish stock assessments per the United Nations Conference on the Law of the Sea of 1982[5]. The provisions of UNCLOS need coastal states to take management actions based on the best scientific evidence available to ensure that fish stocks do not exceed the Maximum Sustainable Yield (MSY)[6]. Likewise, the Code of Conduct for Responsible Fisheries (CCRF), approved by all participants of the 1995 FAO Conference, states that all countries must make every effort to collect all the information needed for responsible fisheries[7]. Indonesia has made efforts since the mid-2000s to implement integrated coastal and marine management. This progress has been documented in several legislative measures, including the Protection and Empowerment of Small-scale Fishers, Aquaculture Growers, and Salt Farmers Act of 2016; the Ocean Law of 2014; the Coastal and Small Islands Management Law of 2007 amended in 2014, which encompasses zoning plans for the coast and sea; the Indonesia Ocean Policy of 2017; and the Creation Law (an omnibus law) that impacts business permit procedures[8]. However, these arrangements still do not support implementing the blue economy. Indonesia has long been committed to establishing sustainable and healthy oceans by implementing the Blue Economy principles and adhering to the Code of Conduct for Responsible Fisheries (CCRF, 1995), as mandated by Law Number 32 of 2014 concerning Maritime Affairs as amended in the UUCK.

[3] Nhuong Tran and others, 'Future Scenarios of Fish Supply and Demand for Food and Nutrition Security in Bangladesh: An Analysis with the AsiaFish Model', *Aquaculture*, 568 (2023), 739288 https://doi.org/10.1016/j.aquaculture.2023.739288

[4] Nicholas K. Dulvy and others, 'Overfishing Drives over One-Third of All Sharks and Rays toward a Global Extinction Crisis', *Current Biology*, 31.21 (2021), 4773-4787.e8 https://doi.org/10.1016/j.cub.2021.08.062

[5] Chuanliang Wang, Qian Zhao, and Yen Chiang Chang, 'On the Legal Status of Marine Fishery Resources: From the Perspectives of International Fishery Law', *Heliyon*, 9.4 (2023), e15354 https://doi.org/10.1016/j.heliyon.2023.e15354

[6] Mohamad Alnafissa and others, 'The Impact of Climatic and Environmental Changes on the Sustainable Yield of the Saudi's Capture Fisheries', *Journal of King Saud University - Science*, 33.5 (2021), 101458 https://doi.org/10.1016/j.jksus.2021.101458

[7] SH Aguado and others, 'The Quality of Fisheries Governance Assessed Using a Participatory, Multi-Criteria Framework: A Case Study from Murcia, Spain', *Marine Policy*, 124 (2021), 104280 https://doi.org/10.1016/j.marpol.2020.104280

[8] Naimah Lutfi Talib and others, 'Three Centuries of Marine Governance in Indonesia: Path Dependence Impedes Sustainability', *Marine Policy*, 143 (2022), 105171 https://doi.org/10.1016/j.marpol.2022.105171

By implementing regulations emphasizing the blue economy concept, Indonesia can preserve and enhance the potential of its maritime resources. "Blue economy" has gained prominence as an awareness-raising phrase regarding the environmental protection and economic benefits of the oceans. It is widely recognized as a long-term approach designed to promote equitable and sustainable economic expansion via sectors and activities associated with the oceans. The blue economy aims to accomplish objective 14 of the 2030 Agenda for Sustainable Development, which states, "use and preserve the oceans, seas, and marine resources sustainably for sustainable development[9]. The blue economy is interconnected and expansive. The maritime economy comprises numerous sectors, including shipping, tourism, recreation, and productive boatbuilding, among others—the blue economy endeavors to assemble these stars into a constellation that supports one another[10].

Indonesia's marine realm is a treasure trove of biodiversity housing over 75 % of the world's coral species, 37 % of global reef fish, and diverse mollusks and crustaceans. Despite this international recognition, many marine species in this region, particularly cryptic organisms, remain unidentified at the species level. Substantiating overfishing and restoring fish stocks to the maximum sustainable capture (MSY), or the highest annual catch that can be sustained over an extended period, is the responsibility of Member States, as stated in Target 14.4 of the sdgs. Indonesia has a marine economic potential of Rp. 3000 trillion, of which only Rp. 291.8 trillion has been utilized, according to Ministry of Maritime Affairs and Fisheries data [11]. Furthermore, the archipelago sea is renowned globally as a "mega-biodiversity" sea due to its abundant biodiversity (biota), including flora and fauna[12].

The potential for SDI stockpiling in Indonesian marine waters will continue to increase. Over the past two decades, the potential stock of Indonesian SDI has risen by more than 71%, from 7.3 million tons in 2013 to 12 million tons in 2022. On the contrary, specific categories of fisheries have experienced nationwide overexploitation due to the increased output. Furthermore, reef species play crucial ecological functions within coral reef ecosystems, and the degradation of these functions can result from overfishing[13]. The misuse and improper administration of marine resources are causing an unparalleled deterioration of ocean ecosystems on a global scale. Changes in land use, overfishing and illegal fisheries, the emergence and growth of new maritime industries, and the expansion of coastal development all affect ocean ecosystems. In turn, the degradation of ecosystem health and unsustainable resource utilization will threaten human welfare and alter how individuals utilize the ocean[14].

[9] Xiaofei Qi, 'The Conceptual Framework of the National Blue Economic System: A Multiagent Perspective', *Marine Policy*, 145 (2022), 105287 https://doi.org/10.1016/j.marpol.2022.105287

[10] Sheldon Whitehouse, 'Domestic Opportunities to Advance Blue Economy Priorities', in *Preparing a Workforce for the New Blue Economy* (Elsevier, 2021), pp. 505–11 https://doi.org/10.1016/B978-0-12-821431-2.00021-4

[11] Ambariyanto Ambariyanto and others, 'Taxonomic and Conservation Status of Majoidea "Spider Crabs" from Indonesia: Recommendations for Management', *Regional Studies in Marine Science*, 67 (2023), 103211 https://doi.org/10.1016/j.rsma.2023.103211

[12] Immanuel Sanka and others, 'Synthetic Biology in Indonesia: Potential and Projection in a Country with Mega Biodiversity', *Biotechnology Notes*, 4 (2023), 41–48 https://doi.org/10.1016/j.biotno.2023.02.002

[13] Christina Muller-Karanassos and others, 'Effects of Habitat, Fishing, and Fisheries Management on Reef Fish Populations in Palau', *Fisheries Research*, 241 (2021), 105996 https://doi.org/10.1016/j.fishres.2021.105996

[14] Easkey Britton, Christine Domegan, and Patricia McHugh, 'Accelerating Sustainable Ocean Policy: The Dynamics of Multiple Stakeholder Priorities and Actions for Oceans and Human Health', *Marine Policy*, 124 (2021), 104333 https://doi.org/10.1016/j.marpol.2020.104333

This chapter provides an overview of how human activities influence the ocean's health, the potential repercussions of this on human health, and possible policy solutions at the municipal, national, and international levels to improve ocean health[15].

The application of the Blue Economy concept exemplifies economic development policies that unify the potential of the terrestrial and marine sectors. In this context, "maritime culture" refers to the notion of islands, while "maritime identity" encompasses the broader objective of fostering economic integration to advance the prosperity of a nation. Indonesia must utilize the force of the sea to support the blue economy program, thereby enabling the navy to safeguard and cultivate economic resources. This is because preserving the global financial system is presently the fundamental function of navies. Coordination of government efforts and policy development may be adversely affected by this[16]. An ideal situation for sustainable fisheries would involve a concurrent reduction in overexploitation conditions and an increase in potential SDI stocks. These concerns must be addressed, as potential impacts must diminish, and marine threats must also diminish. This is because, from both an environmental and societal standpoint, ocean health and human well-being are intricately interconnected. This implies that increasing fisheries supplies is an assured consequence of conducting fishing sustainably and securely[17]. Indeed, a significant degree of overexploitation accompanies the substantial potential stock of SDI. Concurrently, fisheries management must regulate the accountability of business actors and fishermen regarding the truthful and transparent disclosure of their captures, including transshipment activities, to establish sustainable and equitable fisheries[18]. A breach of the duty to fulfill these obligations may result in the forfeiture of the allocated quota. However, there is no regulation concerning the total allowable capture quota (TAC).

Andrés M. Cisneros-Montemayor, et al.'s research, indicates that the developing maritime sector possesses a distinct potential to promote environmental sustainability and social equality in Blue Economies. However, realizing this objective will be considerably facilitated by prioritizing and enforcing fairness guidelines, effectively preventing business-as-usual practices.[19] Concurrently, a study by Holly J. Niner et al. demonstrates that these requirements are interconnected with safeguarding against forthcoming political and environmental disruptions, preserving the ecological foundation for advancing the blue economy and enhancing governance capacity at every level. Adequate and impartial. According to the study's findings, co-production

[15] Megan Jungwiwattanaporn and others, 'Ocean Ecosystem Degradation and Human Populations', in *Oceans and Human Health* (Elsevier, 2023), pp. 243–64 https://doi.org/10.1016/B978-0-323-95227-9.00006-3

[16] Yety Rochwulaningsih and others, 'Marine Policy Basis of Indonesia as a Maritime State: The Importance of Integrated Economy', *Marine Policy*, 108.July (2019), 103602 https://doi.org/10.1016/j.marpol.2019.103602

[17] Sturla Kvamsdal and others, 'Expert Opinions on Threats and Impacts in the Marine Environment', *Marine Policy*, 147 (2023), 105382 https://doi.org/10.1016/j.marpol.2022.105382

[18] Solène Guggisberg, Aline Jaeckel, and Tim Stephens, 'Transparency in Fisheries Governance: Achievements to Date and Challenges Ahead', *Marine Policy*, 136 (2022), 104639 https://doi.org/10.1016/j.marpol.2021.104639

[19] Andrés M. Cisneros-Montemayor and others, 'Agreements and Benefits in Emerging Ocean Sectors: Are We Moving towards an Equitable Blue Economy?', *Ocean & Coastal Management*, 220 (2022), 106097 https://doi.org/10.1016/j.ocecoaman.2022.106097

will be crucial to developing a sustainable blue economy.[20] In contrast to prior research, the author intends to investigate how blue economy policy influences fisheries management in Indonesia. Furthermore, the author seeks to identify a regulatory framework that can enhance blue economy policy and facilitate the achievement of sustainable fisheries management.

Additional regulation is required to address these issues; this can be accomplished by implementing the blue economy, which necessitates the use of renewable energy sources and clean technology to attain social and economic stability in a transparent, accountable manner that involves the participation of stakeholders. The estimated market value of coastal, marine resources and affiliated industries is between $3 trillion and $5 trillion, or approximately 5% of the global GDP. The ocean economy provides 15–2 percent of the gross domestic product of some East Asian nations. Enhanced asset management within the blue economy possesses the capacity to augment productivity levels, optimize operational efficiency, and yield lucrative returns for stakeholders. Therefore, the author proposes that Indonesia strengthen its blue economy policy to attain sovereignty over its marine resources.

METHOD

Normative law research is a branch of law that investigates the application of the law as a societal norm or rule that serves as a standard for the conduct of all individuals.[21] Prescriptive, this legal research endeavors to furnish a description or delineate issues per established circumstances or factual information. A conceptual approach is employed during the writing phase of this study. A conceptual approach is one type utilized in legal research that offers an analytical perspective for resolving research problems by examining the values enshrined in enacting a regulation about the used concept or reviewing the conceptual aspects underpinning it.[22]

RESULT AND DISCUSSION

The Regulations of Sustainable and Fair Fisheries Management

It is imperative to impart the fundamental tenets of equitable and sustainable fisheries management to a nation endowed with oceans. This principle serves not only to ensure the provision of potential resources for the nation's advancement but also to ensure that the food requirements of present and future generations (intrageneration) are met (intergenerationally). Oceans endowed with potential resources, robust ecosystems, and sustainable marine resources will result from applying sustainable fisheries principles. Simultaneously, the tenet of equitable fisheries entails ensuring that all succeeding generations have equal access to and advantages from these resources, which includes ecological justice, which safeguards the integrity of the ecosystem. The primary objective of sustainable development is to

[20] Holly J. Niner and others, 'Issues of Context, Capacity and Scale: Essential Conditions and Missing Links for a Sustainable Blue Economy', *Environmental Science & Policy*, 130 (2022), 25–35 https://doi.org/10.1016/j.envsci.2022.01.001

[21] Abdul Kadir Jaelani, Reza Octavia Kusumaningtyas, and Asron Orsantinutsakul, 'The Model of Mining Environment Restoration Regulation Based on Sustainable Development Goals', *Legality : Jurnal Ilmiah Hukum*, 30.1 (2022), 131–46 https://doi.org/10.22219/ljih.v30i1.20764

[22] Lego Karjoko and others, 'Indonesia's Sustainable Development Goals Resolving Waste Problem: Informal to Formal Policy', *International Journal of Sustainable Development and Planning*, 17.2 (2022), 649–58 https://doi.org/10.18280/ijsdp.170230

fulfill the current generation's requirements while protecting future generations' capacity to realize the Sustainable Development Goals (SDGs), which encompass economic advancement, environmental preservation, and social fairness.[23]

In addition to socioeconomic equity, effective fisheries management must guarantee the long-term sustainability of fisheries resources. However, equity has not been sufficiently considered in most fishery management programs, which have primarily concentrated on the biological aspects of the fishery.[24] This undermines the significance of fisheries management in promoting human welfare, including employment and poverty reduction.[25] Since fairness is frequently critical in problems involving the allocation of limited resources, it is similarly essential to the success of the resultant zones in the ocean zoning process. [26] Furthermore, equity is acknowledged as a crucial component of the ecosystem-based approach to human activity management, which seeks to balance sustainable uses and biodiversity conservation.[27]

The public consciousness regarding the deteriorating state of the environment and the critical nature of safeguarding it, environmental concerns are progressively occupying a more significant position in developing domestic and global policies. Economic growth is no longer regarded as an inviolable objective in this context. Environmental protection should serve as a precondition for economic expansion. Thus, sustainable development constitutes development. As the first international agreement of the World Trade Organisation to address sustainable fisheries governance, the AFS is instrumental in the global legal framework governing sustainable marine fisheries management.[28] Fisheries policies serve to govern and regulate human-nature interactions to generate favorable environmental, social, and economic consequences. Developing or modifying fisheries policies periodically to address emergent or ongoing issues can frequently result in favorable outcomes for fisheries management.[29] Compliance, favorable stakeholder attitudes, and behaviors are crucial determinants[30] of the effectiveness of fisheries policies[31]; thus, stakeholder engagement is an essential element of fisheries management and policy formulation.[32]

[23] Irna Sari and others, 'Integrating Social Equity as a New Paradigm in Managing Fisheries: Case of the Flying Fish Roe Fishery, West Papua Province, Indonesia', *Ocean & Coastal Management*, 249 (2024), 106971 https://doi.org/10.1016/j.ocecoaman.2023.106971

[24] Kevern L. Cochrane, 'Reconciling Sustainability, Economic Efficiency and Equity in Marine Fisheries: Has There Been Progress in the Last 20 Years?', *Fish and Fisheries*, 22.2 (2021), 298–323 https://doi.org/10.1111/faf.12521

[25] Alfredo Giron-Nava and others, 'Sustainable Fisheries Are Essential but Not Enough to Ensure Well-being for the World's Fishers', *Fish and Fisheries*, 22.4 (2021), 812–21 https://doi.org/10.1111/faf.12552

[26] Jian Li, Yingying Xiong, and Bao Jiang, 'Distribution Fairness in Emergency Material Vehicle Scheduling Based on Uncertain Time and Demand', *Journal of Uncertain Systems*, 14.02 (2021), 2150014 https://doi.org/10.1142/S1752890921500148

[27] Ruru Jia and others, 'Robust Bilevel Ocean Zoning for Marine Renewable Energy, Fishery and Conservation with Fairness Concern', *Information Sciences*, 650 (2023), 119702 https://doi.org/10.1016/j.ins.2023.119702

[28] Jiayu Bai and Yuting Wu, 'How Can the Rule of Law under the WTO Framework Ensure Sustainable Fishery Governance through Fishery Subsidies? A Study from the Perspective of Special and Differential Treatment', *Heliyon*, 10.1 (2024), e23259 https://doi.org/10.1016/j.heliyon.2023.e23259

[29] Nina Da Rocha and others, 'Reduction in Seabird Mortality in Namibian Fisheries Following the Introduction of Bycatch Regulation', *Biological Conservation*, 253 (2021), 108915 https://doi.org/10.1016/j.biocon.2020.108915

[30] David Soto-Oñate and Ana C. Lemos-Nobre, 'The European Union Landing Obligation: The Compliance Problems Derived from Its Multilevel Approach', *Marine Policy*, 132 (2021), 104666 https://doi.org/10.1016/j.marpol.2021.104666

The United Nations established the World Commission on Environment and Development (WCED) 1983 as an autonomous body deliberating on and offering suggestions regarding worldwide environmental challenges. The "Bruntland Commission," presided over by the Norwegian prime minister Mrs. Gro Harlem Brundtland, WCED, issued a report titled "Our Common Future" in 1987. The report outlined a practical initiative to incorporate environmental considerations into all national, international, and local economic development strategies. The subsequent significant event in the progression of sustainable development transpired during the United Nations Conference on Environment and Development (UNCED), commonly referred to as the Earth Summit, which took place from June 3rd to June 14th, 1992, in Rio de Janeiro, Brazil. This was the most sizable symposium devoted to environmental issues at that time.[33] The 1982 United Nations Convention on the Law of the Sea (UNCLOS) delineates numerous principles governing the governance of the oceans. To maximize the utilization of biological resources, coastal states are legally obligated to protect natural resources within their exclusive economic zone (EEZ) from overexploitation. However, it is possible to further optimize the utilization of such resources.[34]

The expanding depletion of global fisheries resources is "awareness" internationally, reflected in the globalization of fisheries resource management. An estimated 48% of global fish supplies have been depleted to their maximum capacity, 16% have manifested indications of overfishing, and 9% have sustained damage. This indicates that 69% of global fisheries operate under yellow-light conditions. This is unsurprising given that 20% of Africans and one billion Asians rely on marine protein sources for subsistence. Furthermore, according to the FAO, thirty percent of fishing practices are harmful. Additionally, 27% of coral reefs worldwide have been damaged. Failure to foresee this could result in an estimated 58% of the damage being repaired by 2030. This condition necessitates the dedication of all nations to the conscientious administration of fisheries resources to establish sustainable fisheries.[35]

Indonesian waters, the legal politics of fisheries management are governed by the principles of sovereignty and jurisdiction. Consequently, the initial emphasis of maritime policy during the period of independence was on asserting and fortifying sovereignty over the Exclusive Economic Zone (EEZ) and the Territorial Sea. The formulation of policies to regulate Indonesian fisheries did not occur until the mid-1970s when Decree No. 561/1973 of the Minister of Agriculture mandated that all industrial vessels engaged in shrimp trawling (shrimping) utilize their entire bycatch. The decision of this agriculture minister was subsequently accompanied by the formulation of a set of principles to govern the conservation and administration of

[31] Edison D. Macusi, Ilah Dianne G. Morales, and others, 'Impact of Closed Fishing Season on Supply, Catch, Price and the Fisheries Market Chain', *Marine Policy*, 138 (2022), 105008 https://doi.org/10.1016/j.marpol.2022.105008
[32] Paul J.B. Hart, 'Stewards of the Sea. Giving Power to Fishers', *Marine Policy*, 126 (2021), 104421 https://doi.org/10.1016/j.marpol.2021.104421
[33] Toya Hirokawa and Benjamin S. Thompson, 'The Influence of New Sustainable Fisheries Policies on Seafood Company Practices and Consumer Awareness in Japan', *Marine Policy*, 157 (2023), 105819 https://doi.org/10.1016/j.marpol.2023.105819
[34] Edison D. Macusi, Imee S. Maynawang, and others, 'Women Lead Small-Scale Fisheries to Sustainability in Surigao Del Sur, Philippines', *Marine Policy*, 155 (2023), 105768 https://doi.org/10.1016/j.marpol.2023.105768
[35] Frazen Tolentino-Zondervan and Niels A. Zondervan, 'Sustainable Fishery Management Trends in Philippine Fisheries', *Ocean & Coastal Management*, 223 (2022), 106149 https://doi.org/10.1016/j.ocecoaman.2022.106149

fish resources. Decree Number 50/KEPMEN-KP/2017, issued by the Minister of Maritime Affairs and Fisheries, pertains to estimating the potential, number of allowable captures, and level of utilization of fish resources in WPPNRI. This decree was implemented in support of sustainable fisheries management. In the future, the formulation of fish resource allocation distribution will be primarily based on potential estimates, the permitted number of catches, and the level of utilization of fish resources in WPPNRI. The findings will inform this determination of studies conducted by the National Commission for the Study of Fish Resources (Komnas Kajiskan). Based on the examination above of the responsibilities and functions of Komnas KAJISKAN, it can be inferred that the organization's presence is crucial and highly strategic in ascertaining potential estimation data, JTB, and the extent to which SDI is utilized in WPPNRI, including the minimum size or weight of fish species that can be captured. As intended by FAO, this was accomplished by a group of scientists specializing in fish resources. Specifically, precautionary fisheries management policies grounded in the most reliable scientific evidence are emphasized as policy material to prevent irreparable environmental harm and ensure the implementation of responsible fisheries management practices.

The sustainable utilization of coastal and marine resources is contingent on proficiently executing area-based management strategies, widely acknowledged for their manifold benefits.[36] Area-based fisheries management measures (ABFMs) are spatially defined and formally established conservation or fishery management strategies. Their implementation aims to accomplish one or more desired fishery outcomes, primarily focusing on the sustainable utilization of fisheries resources. The implementation of these strategies aims to influence exploitation rates directly. They include a range of interventions, including but not limited to limiting fleet capacity, ensuring genetic diversity is preserved, supporting the rebuilding phase of fisheries through the protection of depleted stocks and their habitats, safeguarding essential fish habitats (including spawning and nursery habitats), and regulating the harvest of specific life stages.[37] The preservation of biodiversity and the sustainability of fisheries necessitate that management decisions be founded on reliable scientific guidance.[38]

Fishing operations should be temporally halted in water areas subject to overfishing, as this would constitute temporary conservation. Similarly, until the waters are deemed recovered and conducive to further exploration, the issuance of fishing permits in the region ought to be temporarily halted (moratorium). A fair and sustainable fisheries management monitoring framework must be followed by the principles contained in the second and fifth principles of Pancasila, Indonesia's national philosophy. The precepts in question encompass both horizontal and vertical tenets of justice. From a standing standpoint, justice embodies the essence of justice bestowed by the Almighty God, who inspires justice within humanity. Conversely,

[36] Serge Michel Garcia and others, 'OECMs in Marine Capture Fisheries: Key Implementation Issues of Governance, Management, and Biodiversity', *Frontiers in Marine Science*, 9 (2022) https://doi.org/10.3389/fmars.2022.920051
[37] Dimitra Petza and Stelios Katsanevakis, 'Science-Informed Recommendations to Enhance the Effectiveness of Area-Based Fisheries Management for Fisheries Sustainability and Marine Conservation: A Global Mini-Review', *Fisheries Research*, 272 (2024), 106947 https://doi.org/10.1016/j.fishres.2024.106947
[38] Shu Su and others, 'A Comprehensive Framework for Operating Science-based Fisheries Management: A Checklist for Using the Best Available Science', *Fish and Fisheries*, 22.4 (2021), 798–811 https://doi.org/10.1111/faf.12551

from a horizontal perspective, the application of human justice transcends generations (intergeneration justice) and extends to communities beyond human beings (non-human). State/government policies toward the people are inextricably linked to distributive justice in managing fisheries resources; these policies may be delegated to regional governments via autonomous design and assistance duties. Opportunities exist for regions to manage natural resources in a manner that expedites the attainment of regional community welfare based on this concept. The granting of this authority is just, given that fishing communities are concentrated in coastal districts and cities. Constraint with this, the advancement of community-based fisheries management will correspondingly increase the involvement of the public in resource management. This will include not only financial contributions to regional or state (APBN) or PAD) income sources but also active participation in monitoring and decision-making processes (as stakeholders in PBD). The future trajectory of fisheries is contingent upon the adaptability and responsiveness of regulatory institutions and perceptions regarding the legitimacy of governance and management processes, and these factors collectively shape the industry.[39]

The participants in the fisheries industry—small and large fishermen (corporations)—must be granted equal rights to utilize, manage, and capture fish in Indonesian waters, including those who are highly disadvantaged, to ensure equitable fisheries management. (those in need). However, the privileges granted are not proportional to each individual but are not identical. The inequitable nature of giving these rights is predicated on intuitionism (a sense of justice), which holds that individuals instinctively perceive that the government is looking out for them to maximize their happiness by utilizing Indonesia's abundant fisheries resources.

Strengthening Blue Economy Policy to Achieve Sustainable Fisheries in Indonesia

The increased significance of ocean-based economic operations on a global scale has sustained 31 million employees and contributed $1.5 trillion annually, or the equivalent of Russia's gross domestic product. On the contrary, the oceans face significant perils due to human activities (e.g., overexploitation and pollution) and natural phenomena (e.g., climate change)[40]. The damage is inextricably linked to the regulations not yet implemented in the blue policy. This research and other in-depth policy analyses demonstrate how the BND proposal integrates social sustainability principles into upcoming marine policies[41]. Innovation opportunities are anticipated to abound, and the blue economy may generate 100 million jobs by 2030. One of the most significant contributors to improving living standards in Asian and Pacific nations is economy blue.

[39] Julia G. Mason and others, 'Attributes of Climate Resilience in Fisheries: From Theory to Practice', *Fish and Fisheries*, 23.3 (2022), 522–44 https://doi.org/10.1111/faf.12630

[40] Nguyen Thi Hong Nham and Le Thanh Ha, 'The Role of Financial Development in Improving Marine Living Resources towards Sustainable Blue Economy', *Journal of Sea Research*, 195 (2023), 102417 https://doi.org/10.1016/j.seares.2023.102417

[41] Stephen Axon and Sammy Collier, 'Breaking Blue: Establishing Comprehensive Policy for a Just and Inclusive Transition for the Blue Economy', *Marine Policy*, 147 (2023), 105343 https://doi.org/10.1016/j.marpol.2022.105343

A surge in challenges associated with developing natural resources on land[42] has generated an unprecedented level of interest in creating novel technologies and methods to expand economic activities based on the ocean.[43] However, concerns have been expressed regarding the potential social and environmental impacts of this new frontier for economic growth on coastal and marine ecosystems.[44] In 2012 (Rio+20), the United Nations Conference on Sustainable Development coined the phrase "blue economy" in response to the rapid emergence of ocean governance challenges in the twenty-first century.[45] While there is ongoing debate regarding its precise definition and extent, the concept is acknowledged as a framework that facilitates environmental sustainability while promoting social equality, enhancing quality of life, and fostering economic growth.[46] Its objective is to encourage the sustainable industrialization of ocean resources so that their benefits may be distributed globally.[47]

The occurrence of problems is not limited to Indonesia; other nations, such as Canada, also grapple with similar policy challenges. In Canada, the lack of a precisely delineated "ocean climate" framework increases coastal systems' vulnerability to the impacts of climate change. The absence of a climate-responsive fisheries policy in Canada exacerbates the vulnerability of the country's fisheries to the adverse effects of climate change. Despite the harmful effects of climate change already being felt by fisheries of different fleet sizes, small-scale fishing operations comprise the coastal and inshore fleets[48]. China faces policy challenges in its pursuit of a blue economy and the improvement of blue products. The challenge confronting China's blue industries is transitioning from the old to the new. A "disconnection" risk may be associated with China's transformation and modernization efforts. Reforms and adjustments to marine-related resources are imperative to surmount the impediments to the advancement of these blue industries[49]. Incoherence in government policy can result in fragmentation, coordination issues, implementation gaps, inefficient use of resources, and a loss of legitimacy or credibility[50].

Highlighting the importance of ocean governance and the valuation of ecosystem services provided by the ocean, the blue economy addresses its conceptualization.

[42] Camilla Novaglio and others, 'Deep Aspirations: Towards a Sustainable Offshore Blue Economy', *Reviews in Fish Biology and Fisheries*, 32.1 (2022), 209–30 https://doi.org/10.1007/s11160-020-09628-6

[43] Jean-Baptiste Jouffray and others, 'The Blue Acceleration: The Trajectory of Human Expansion into the Ocean', *One Earth*, 2.1 (2020), 43–54 https://doi.org/10.1016/j.oneear.2019.12.016

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[45] Xiaofei Qi, 'Building a Bridge between Economic Complexity and the Blue Economy', *Ocean & Coastal Management*, 216 (2022), 105987 https://doi.org/10.1016/j.ocecoaman.2021.105987

[46] Celine Germond-Duret, 'Framing the Blue Economy: Placelessness, Development and Sustainability', *Development and Change*, 53.2 (2022), 308–34 https://doi.org/10.1111/dech.12703

[47] Miguel Frohlich and others, 'A Network Approach to Analyse Australia's Blue Economy Policy and Legislative Arrangements', *Marine Policy*, 151 (2023), 105588 https://doi.org/10.1016/j.marpol.2023.105588

[48] Jack Daly and others, 'Changing Climates in a Blue Economy: Assessing the Climate-Responsiveness of Canadian Fisheries and Oceans Policy', *Marine Policy*, 131 (2021), 104623 https://doi.org/10.1016/j.marpol.2021.104623

[49] Yu Ni, Peilin Du, and Hui Chen, 'Enhancing Blue: The Resilience of Blue Economy and the Efficiency of China's Sea-Land Industrial Synergy', *Technological Forecasting and Social Change*, 198 (2024), 123007 https://doi.org/10.1016/j.techfore.2023.123007

[50] Michelle Voyer and others, 'Assessing Policy Coherence and Coordination in the Sustainable Development of a Blue Economy. A Case Study from Timor Leste', *Ocean & Coastal Management*, 192 (2020), 105187 https://doi.org/10.1016/j.ocecoaman.2020.105187

Moreover, international fisheries governance initiatives influence the scale of the blue economy. Overwhelmingly, blue economy activity is frequently attributed to the significance of ocean governance[51]. Regarding the utilization and allocation of benefits derived from ocean and coastal resources, national governments—as the custodians of virtually all such resources—are obligated to formulate objectives, principles, and tactics that are unambiguous and fair. This will continue to be crucial in establishing blue economies, as intergovernmental and non-governmental organizations have been instrumental in crafting ocean policy and assisting with its implementation. Marginalized communities are disproportionately affected by the severe social, economic, and ecological problems that today's world faces[52]. The emerging socioeconomic, ecological, political, and social equity issues raised by academia require special attention to ensure small-scale fisheries' long-term viability in the blue economy. Globally, small-scale fishers and local coastal communities in developing countries depend on the ocean and coastal ecosystem for their social well-being and livelihoods. The blue economy should strive to explicitly acknowledge the diversity and complexity of small-scale fisheries and strengthen its capacity to clarify those particularities within the governability system.[53]

The expansion of the international maritime sector has emerged as the primary catalyst for worldwide economic expansion. Oreine enterprises serve as micropower carriers and a critical engine for advancing the marine industry and economy. Oreine enterprises function as micropower carriers for developing the maritime industry and economy[54]. That climate change must be mitigated also requires a shift in consumption patterns; therefore, blue economy planning and governance must incorporate consumption patterns. Some fisheries, for instance, may be simpler to portray as sustainable due to the omission of their dependence on fishing grounds. Furthermore, this approach would enhance climate change accountability and expose potential hubs for climate advocacy and policy influence[55].

To enhance the marine policy, we must make the policymakers and managers increasingly aware of the need to support and analyze the economic and social dimensions of the blue industry. The blue economy consists of economic sectors and related policies that determine the sustainable use and management of marine resources[56]. Understanding the ability to predict the introduction of diverse viable innovations into the operational context of marine and maritime sector organizations

[51] Poulomi Bhattacharya and Aruna Kumar Dash, 'Determinants of Blue Economy in Asia-Pacific Island Countries: A Study of Tourism and Fisheries Sectors', *Ocean & Coastal Management*, 211 (2021), 105774 https://doi.org/10.1016/j.ocecoaman.2021.105774

[52] Andrés Miguel Cisneros-Montemayor and others, 'A Primer on the "Blue Economy:" Promise, Pitfalls, and Pathways', *One Earth*, 5.9 (2022), 982–86 https://doi.org/10.1016/j.oneear.2022.08.011

[53] Raymond K. Ayilu, Michael Fabinyi, and Kate Barclay, 'Small-Scale Fisheries in the Blue Economy: Review of Scholarly Papers and Multilateral Documents', *Ocean & Coastal Management*, 216 (2022), 105982 https://doi.org/10.1016/j.ocecoaman.2021.105982

[54] Wen Ma, Ying Li, and Lili Ding, 'Does Marine Financial Policy Affect Total Factor Productivity of Marine Enterprises? An Empirical Evidence Based on Chinese First Guidance on Strengthening Finance for Marine Economy', *Marine Pollution Bulletin*, 195 (2023), 115493 https://doi.org/10.1016/j.marpolbul.2023.115493

[55] Leah M. Fusco and others, 'Blueing Business as Usual in the Ocean: Blue Economies, Oil, and Climate Justice', *Political Geography*, 98 (2022), 102670 https://doi.org/10.1016/j.polgeo.2022.102670

[56] Peilin Du and Yu Ni, 'Higher Hierarchical Growth through Country's Blue Economy Strategies', *Ocean & Coastal Management*, 233 (2023), 106467 https://doi.org/10.1016/j.ocecoaman.2022.106467

has been deemed crucial by the mission policy approach to the blue economy[57]. The lack of strong opinions from the community's civil society makes the blue economy's inadequate engagement with resource users a problematic period for strengthening marine policy. Because of this lack of involvement, resource users cannot successfully challenge the complex conceptualization of seas as placeless boundaries where ecology and economics may coexist[58]. There must be significant policy ramifications. The blue product space provides a perspective on multiproduct connections with various features, which illustrates the element associations and their evolutionary links throughout time in the development of a nation's blue economy. We identify the export mix formed by links between the blue industries and their products with competitive advantages while doing a descriptive analysis of the export structure of a nation's blue economic development.[59]

Considering the considerable attention given to the BE (*Blue Economy*) and its economic significance, it is unexpected that although sustainability dilemmas and justice components are extensively discussed in academic circles, they are conspicuously absent in policy discussions. It is impossible to overstate the significance of a fair and inclusive transition for the BE in light of the magnitude and difficulties of the climate crisis. The climate crisis disproportionately affects vulnerable and low-income coastal communities, which have traditionally been disregarded in marine policy discussions regarding the allocation of benefits and burdens due to its threat multiplier effect.[60] In general, failure ensues when the participation of stakeholders is insufficient and lacks continuity in interest-based decision-making and collaboration, which hinders the proactive resolution of complications and crises. Indeed, as the use and regulation of coastal and marine areas increase, greater emphasis must be placed on equity and inclusivity in coastal governance, including BE development.[61]

To increase adaptive capacity to climate hazards, promote human well-being and social justice, and facilitate sustainable production and utilization of coastal resources, a policy with a more comprehensive approach, one in which justice is a fundamental principle, is required. The Blue New Deal (BND) is an unsuitable policy framework specifically designed to integrate and construct fairness and resilience into BE. The blue economy must promote sustainable marine-based activities. Additionally, global fisheries governance impacts the magnitude of the blue economy. The transition to a blue economy may also be facilitated by financing structures that entail more significant risks but have the potential to yield higher returns for investors. This investment may manifest as venture capital or the procurement of shares in a well-established enterprise with a significant track record in the industry. Environmental issues require the implementation of innovative technologies and new arrivals.[62] Establishing a Blue Economy must be consistent with SDG 17 and demonstrate policy coherence and coordination within the government structure. Endeavors to develop

[57] Matthew J. Spaniol and Nicholas J. Rowland, 'Anticipated Innovations for the Blue Economy: Crowdsourced Predictions for the North Sea Region', *Marine Policy*, 137 (2022), 104874 https://doi.org/10.1016/j.marpol.2021.104874

[58] (Fusco et al., 2022)

[59] Qi, 'Building a Bridge between Economic Complexity and the Blue Economy'.

[60] Alejandro Vega-Muñoz, Guido Salazar-Sepúlveda, and Nicolás Contreras-Barraza, 'Identifying the Blue Economy Global Epistemic Community', *Water*, 13.22 (2021), 3234 https://doi.org/10.3390/w13223234

[61] Vega-Muñoz, Salazar-Sepúlveda, and Contreras-Barraza.

[62] Nham and Ha.

a unified and synchronized strategy throughout the maritime, jurisdictional, and pertinent public and private spheres.

The global community approaches the midpoint of the 2030 Agenda for Sustainable Development implementation process, progress has been noticeably sluggish, necessitating an immediate and profound shift in approach. Therefore, a revised vision is put forth to establish a sustainable blue economy that is both ambitious and equitable. This vision is outlined in five guiding principles that advocate for the following: the promotion of healthy ecosystems, inclusive and equitable processes, climate stability, sustainable consumption and production, and circular processes.

CONCLUSION

Over three decades ago, the World Commission on Environment and Development (WCED) stressed natural resource conservation. Sustainable fisheries occur when overexploitation decreases linearly proportionate to SDI stock growth. Sustainable fishing practices create healthy ecosystems and viable and sustainable marine resources. If conservation efforts overlook sustainable management, marine carrying capacity may fall, threatening ecological equilibrium. In fisheries resource management, state and government policies toward society and distributive justice are intertwined; local governments may have autonomous design and assistance obligations. All fisheries industry participants, even the poorest community groups, must have equal rights to use, manage, and collect fish in Indonesian waters, including primary and small fishermen. To promote sustainable coastal resource use and production, improve social justice and human welfare, and strengthen climate adaptation, holistic policies that prioritize justice are needed. National development strategies must include a Blue Economy-Based Marine Economic Development strategy to ensure sustainability and promote integration and harmony. Therefore, a revised vision for an ambitious, equitable, and sustainable blue economy is offered. This vision is founded upon the following five governance principles: inclusive and equitable processes, climate stability, sustainable consumption and production, circular processes, and the promotion of healthy ecosystems.

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