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The Role of Marine Protected Areas in The Conservation of Fisheries Resources In Indonesia: A Legal Analysis

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Abstract

The Marine Protected Area (MPA) under international law, is recognized as a prominent tool to conserve marine biodiversity and viewed as universal effort to overcome the depletion of marine resources and the global decline of the marine environment, which directly impacted the sustainability of fish resources. In 2020 Indonesia enacted a unified regulation concerning the MPA establishment which was the MMAF Regulation 31/2020. Accordingly, MPA planners and managers are able to outline the objective of MPA appropriately and minimise the inaccuracy in the MPA plan stage. MPA categories identified in MMAF Regulation 31/2020 also adopted the IUCN categories V and VI, the combination of protection, preservation and utilisation of marine resources. The establishment of MPA can also be implemented in coastal areas and small islands and in the Indonesian Fisheries Management Area (IFMA), a management measure primarily to ensure the sustainability of fish resources. This article examines the correlation between the MPA establishment and fish resource conservation in Indonesian waters. MPA and fisheries conservation share a similar fundamental approach, the ecosystem approach, to which the objective of this approach is to conserve the ecosystem structure and function within ecologically meaningful boundaries in an integrated manner; in other words, this approach is an essential aspect of the integrated management approach.

Keywords: *Ecosystem Approach, fisheries conservation, fisheries resources, Indonesian Fisheries Management Areas, Marine Protected Areas.*

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A. INTRODUCTION

Indonesia is an archipelagic state located between the Pacific and Indian Oceans and two continents, Asia and Australia. The country is comprised of 17,000 islands and spread across an extensive marine area totalling 7.81 million km² which 3.25 million km² is the ocean, 2.55 million km² is the Exclusive Economic Zone, and only about 2.01 million km² of the island. In Indonesia, fisheries resources are considered the most significant economic sector, particularly in generating industries and earning foreign exchange from fish export. In addition, the fishing industry also significantly contributes to the nation's food security. In 2021, Indonesia's fisheries produced 21,8 million tonnes, with approximately 7,2 million tonnes coming from the inland and marine catch.² The fisheries sector's gross domestic product (GDP) at current prices reached 115.17 trillion (IDR) in the third quarter of 2021, according to the Indonesian Central Statistics Agency (Badan Pusat Statistik).³ Fisheries contributed 2,66% to Indonesia's overall GDP and is considered the second largest after agriculture and agricultural services.⁴ However, Indonesia is also struggling and faces numerous challenges in managing fisheries resources. Significant threats to Indonesian fisheries resources are biodiversity loss resulting from, among other things, illegal and destructive fishing. To encounter biodiversity loss, Indonesia enacted several legislations, and these are Fisheries Law (Law No. No. 31/2007 amended by Law No. 45/2009), Government Regulation No. 60/2007 Regarding Fisheries

Conservation, Law No. 27/2007 amended by Law No. 1/2014 Regarding Management of Coastal Area and Small Island. These instruments are deliberated as a legal basis for Indonesia to establish fisheries conservation measures, one of which is the conservation tool, Marine Protected Area (MPA).⁵

In 2020, there were 137 MPAs managed by the provincial government or district government, covering 13.95 million hectares and holding the most significant percentage of Indonesian MPA.⁶ The total of Indonesian MPA coverage managed by the Ministry of Maritime Affairs and Fisheries (MMAF),⁷ the Ministry of Environment and Forestry (MOEF),⁸ and the District Government is 23.8 million hectares and is still expanding to 28 million hectares in 2021.⁹ Indonesia is also committed to fulfilling the global target to expand the conservation area by up to 30% in 2030.

The MMAF Regulation No. 31/2020 regarding the Management of Conservation Areas is the latest regulation on establishing Indonesian MPA. Its enforcement was revoking the previous MMAF Regulations 17/2008 concerning Conservation Areas in Coastal Areas and Small Islands, MMAF Regulation 2/2009 concerning The Establishment of Marine Conservation, MMAF Regulation 30/2010 concerning the Management Plan and Marine Conservation Area Zonation, and specific provisions (Article 4-10) on the MMAF Regulation 47/2016 concerning the Utilization of Marine

² 'Produksi Perikanan' <https://statistik.kkp.go.id/home.php?m=prod_ikan_prov&i=2#panel-footer-kpda> accessed 20 January 2023.

³ 'Badan Pusat Statistik' <<https://www.bps.go.id/subject/56/perikanan.html#subjekViewTab3>> accessed 20 January 2023.

⁴ *Ibid.*

⁵ Hereinafter referred to as 'MPA'.

⁶ 'Badan Pusat Statistik' <https://www.bps.go.id/indikator/indikator/view_data/0000/data/1289/sdgs_14/1>. accessed 5 January 2023.

⁷ Hereinafter referred to as 'MMAF'.

⁸ Hereinafter referred to as 'MOEF'.

⁹ 'Badan Pusat Statistik' (n 6).

Conservation.¹⁰ Considering the compilation and construction of provisions included in MMAF Regulation 31/2020, it can be assumed that this regulation is the codification of four previous MMAF Regulations.

B. A BRIEF INTRODUCTION TO MPA

MPA has gained international recognition and is an effective tool for conserving marine biodiversity. Marine biodiversity has vital importance for the survival of human beings; hence, it is not an exaggeration to consider that its degradation and declining of it become an enormous issue and consideration for the international community.¹¹ The legal framework to establish MPA has been widely discussed through multiple international forums and conferences and included in various instruments as a conservation measure of marine biodiversity. Alexander Gillespie stated that there are eight hundred variations in the definition of protected areas.¹²

International organisations have generated different definitions of protected areas in their instruments; therefore, overlapping and differing standards on protected areas are inevitable. For example, protected areas managed by International Maritime Organization (IMO) are established to regulate shipping schemes,¹³ and the Food and Agricultural Organization of United Nations (FAO) promote MPA for fisheries

management purposes.¹⁴ Article 2 of the United Nations Convention on Biological Diversity (UNCBD)¹⁵ highlights the protected area definition of its purpose to achieve specific conservation objectives. The OSPAR Convention emphasises protecting and conserving species, ecosystems, habitats, or ecological processes as their target protected areas.¹⁶ Nevertheless, the most acceptable definition of MPA is provided by the International Union for Conservation of Nature (IUCN)¹⁷:

*“a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values”.*¹⁸

¹⁴ Food and Agriculture Organization of the United Nations (ed), *Fisheries Management. 4: Marine Protected Areas and Fisheries* (Food and Agriculture Organization of the United Nations 2011) 9. *“These Guidelines do not propose a single definition for MPA but explore the full range of spatial management measures and area closures in a broader sense with relevance to fisheries and generally refer to them as MPA. For the purposes of this document, any marine geographical area that is afforded greater protection than the surrounding waters for biodiversity conservation or fisheries management purposes will be considered an MPA.”*

¹⁵ Hereinafter referred to as ‘UNCBD’.

¹⁶ Ingvild Ulrikke Jakobsen, *Marine Protected Areas in International Law: An Arctic Perspective* (Brill Nijhoff 2016) 8; Yoshifumi Tanaka, *The International Law of the Sea* (Third edition, Cambridge University Press 2019) 418.

¹⁷ Hereinafter referred to as ‘IUCN’.

¹⁸ Jon Day and others, *Guidelines for Applying the IUCN Protected Area Management Categories to Marine Protected Areas* (Second edition, IUCN 2019) 14
<https://portals.iucn.org/library/sites/library/files/documents/PAG-019-2nd%20ed.-En.pdf>
 accessed 6 August 2021.

¹⁰ Article 50 MMAF Regulation 31/2020.

¹¹ Yoshifumi Tanaka, *The International Law of the Sea* (2nd edn, Cambridge University Press 2015) 335

<<https://doi.org/10.1017/CBO9781139946261>>.

¹² Alexander Gillespie, ‘Defining Internationally Protected Areas’ (2009) 12 *Journal of International Wildlife Law & Policy*, 229.

¹³ *Ibid.*

'A clearly defined' means that the area must have clear borders. In practice, the proposed location is usually marked by coordinates and maps.¹⁹ Marine features can also define some MPAs, for example, river banks or low tide elevation,²⁰ despite the fact that these demarcations would feasibly be changed over time and are hard to maintain due to their unstable nature. 'Geographical space' refers to the three dimensions of MPA, which address the airspace above, the water column and the seabed.²¹ An MPA can be established to manage one or more of these features on the condition that the ecological interdependence in this area is accommodated.²² 'Recognised' indicates the management of an MPA can be conducted by several interested parties as long as accepted and acknowledged by states, whereas 'dedicated' implies that the MPA establishes under a specific regulation.²³ 'Managed' means the denotative measures in conserving biodiversity; for example, the no-take zone within the MPA implies the area is sterile from any human activities as part of the conservation approach.²⁴

The 'legal' phrase can be described as MPA requires to be recognised under the law; they could be national law or under the international agreement. On the other hand, 'managed through other effective means' construes as the MPA is not regulated by law but recognised under traditional rules and managed by the traditional community.²⁵ The term 'to achieve' suggests the level of efficacy determined by the MPA's objective and continually monitored, evaluated, and reported to ensure their effectiveness.²⁶ The

phrase 'long-term' can be ascribed as the definitive characteristic of MPA. Any protection measures not including long-term conservation cannot qualify as MPA. However, short-term or seasonal protection is still valuable for managing MPA as a complementary element.²⁷

The term 'conservation' implies the *in situ* conservation of ecosystems and habitats, including viable species populations, which refer to the definition provided in Article 2 of UNCBD,²⁸ and the phrase 'nature' refers to biodiversity, genetics, species and the ecosystem.²⁹

The phrase 'associated system services' suggests their essential contribution to the pursuit of nature conservation and can be divided into four services which are provisioning services (providing food and water); regulating services (overflows regulation, depletion, land degradation, and disease); supporting services (soil formation and nutrient cycling); and cultural services (recreational, spiritual, religious and other benefits).³⁰

Finally, the words 'cultural values' mean that regardless of the primary objective of MPA is to conserve nature, the protection of sacred sites or significant cultural and heritage values is also comprehended to ensure the right of the

¹⁹ *Ibid.*

²⁰ *Ibid.*

²¹ *Ibid.*

²² *Ibid.*

²³ *Ibid.*, 15.

²⁴ *Ibid.*

²⁵ *Ibid.*

²⁶ *Ibid.*

²⁷ *Ibid.*, 8; *Ibid.*, 15.

²⁸ Definition of in-situ conservation under Article 2 of UNCBD is also the primary obligation for the conservation of biodiversity, as emphasised in the UNCBD's preamble as follows; "Noting further that the fundamental requirement for the conservation of biological diversity is the in-situ conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings".

²⁹ Day and others (n 18) 16.

³⁰ *Ibid.*

local community which utilizes the area to practice their beliefs is accommodated.³¹

IUCN officially published the MPA categorised in 1994 and gradually revised and updated it in 2008 (IUCN MPA 2008 Guidelines), supplementary guidelines in 2012, and the most recently updated guidelines in 2019.³² The categories of MPA can be divided into six courses and should consider several indicators: primary objective(s); other objectives; distinguishing features; role in the landscape or seascape; what makes the category unique; and issues for consideration.³³

In addition, IUCN recommends the following six benchmarks when establishing MPA. These are: (1) the conservation measure focuses on nature as the priority, (2) defined goals and objectives, (3) appropriate size, location, and design, (4) defined and borderline, (5) management plan to achieve its goals and objectives, and (6) resources and capacity to implement.³⁴

MPA can be established for different purposes and various levels of protection. It could be for the protection of endangered species, maintenance and restoration of viable species populations, nesting or breeding areas, protection of ecosystems, critical habitats, resilience against threats from climate change, or shipping and fishing activities.³⁵ In one particular protected area, it is possible to apply more than one category of MPA. IUCN has divided MPA into six management categories, as listed below:

1. Category Ia: Strict Nature Reserve
Establishes to protect biodiversity and geological or geomorphological

features where human interventions are limited.³⁶ The limitation refers to the exception for certain traditional activities that are fully controlled and monitored only to preserve the environment.³⁷

2. Category Ib: Wilderness area
To protect and preserve the area's natural condition (unmodified or slightly modified areas) where human interventions are limited.³⁸
3. Category II: National Park
To protect natural biodiversity and ecological process with characteristic species or ecosystems. It should not be allowed for consumptive uses but permissible for education and recreation purposes.³⁹
4. Category III: Natural monument or feature
To protect outstanding natural monuments, including their biodiversity and habitats.⁴⁰
5. Category IV: Habitat/species management area
To protect particular species or habitats where the ecosystem is modified and publicly accessible to maintain the area.⁴¹
6. Category V: Protected landscape or seascape
To protect the conservation of important landscapes or seascapes and interactions with human activities through traditional or local practices.⁴²
7. Category VI: Protected areas with sustainable use of natural resources

³¹ *Ibid.*

³² *Ibid.*, 7.

³³ Nigel Dudley, *Guidelines for Applying Protected Area Management Categories* (IUCN 2008) 11 <<https://portals.iucn.org/library/node/9243>> accessed 6 April 2020.

³⁴ Day and others (n 18) 8.

³⁵ Jakobsen (n 16) 11.

³⁶ Dudley (n 33) 13.

³⁷ Alexander Gillespie, *Protected Areas and International Environmental Law* (Martinus Nijhoff Publishers 2017) 34.

³⁸ Dudley (n 33) 14.

³⁹ *Ibid.*, 16.

⁴⁰ *Ibid.*, 17.

⁴¹ *Ibid.*, 19.

⁴² *Ibid.*, 20.

To protect the natural ecosystem in conjunction with cultural values and traditional management of natural resources management systems and sustainably utilise the natural resources.⁴³

The establishment of MPA can be intended for different purposes and ranks of protection, including protecting endangered species, ecosystems, or habitats, breeding and nesting area for maintenance, and restoration of viable populations, resilience against the adverse impact of climate change, or shipping and fishing activities. According to IUCN Guidelines Supplementary, the primary objective of MPA is conserving nature; if any conflicted goals occur, for instance, preserving cultural or spiritual sites, nature conservation still must be prioritised.⁴⁴

The objective of conserving nature is required for an area to be classified as an MPA. The IUCN Guidelines emphasise the example of areas that could not be included as an MPA but rather be classified as Other Effective Area-Based Conservation Measures (OEMs), such as fishery management areas with no broader stated conservation aims, community areas managed for sustainable extraction of marine products, marine and coastal management for tourism, wind farms and oil platforms that indirectly benefit for biodiversity around underwater structures by excluding fishing and other vessels, marine and the coastal area reserved for other purposes (military training areas, disaster mitigation, cables and pipelines or shipping lanes), and large areas where certain species are protected by law.⁴⁵

As long as the area is distinguished with the primary objective of delivering

nature conservation, these areas are conceivably identified as MPA. A combination category, including the no-take zone or marine reserves, is possible; however, the implementation stricter category of MPA still needs to be improved in practice.

According to IUCN guidelines, the area should be legally defined with a definite chart, boundaries, and geographical space to be classified as an MPA. It must be clear which dimension is protected, whether it applies to the water column, water surface, or seabed.⁴⁶ MPA must be recognised and declared by the State and designated under international conventions, agreements, national law, customary law, or other binding commitments that emphasise their status.⁴⁷ In terms of conservation, the implementation of MPA must refer to *in-situ* measures and conduct continuously in the long term.⁴⁸ The size, location, and management of MPA under national jurisdiction are subject to various municipal laws adjusted to establish MPA.

The current development is the agreement under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction (BBNJ Agreement),⁴⁹ which provides the legal definition of MPA.⁵⁰

BBNJ Agreement identifies MPA as “a geographically defined marine area designated and managed to achieve specific

⁴³ *Ibid*, 22.

⁴⁴ Day and others (n 18) 8.

⁴⁵ *Ibid*, 11.

⁴⁶ *Ibid*, 14.

⁴⁷ *Ibid*, 15.

⁴⁸ *Ibid*, 16.

⁴⁹ Hereinafter referred to as ‘BBNJ Agreement’.

⁵⁰ The BBNJ Agreement has been agreed on the Fifth Session of the intergovernmental conference on an international legally binding instrument under the United Nations Convention on the Law of the Sea on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction held in New York, 20 February-3 March 2023.

[long-term biodiversity] conservation objectives and may allow, where appropriate, sustainable use provided it is consistent with the conservation objectives.”⁵¹ The BBNJ Agreement, however, explicitly specifies the establishment of MPA on the high seas and the Area where no States have jurisdiction.⁵²

C. THE ESTABLISHMENT OF MPA IN INDONESIA

MPA implementation in Indonesia is managed under the Ministry of Marine Affairs and Fisheries (MMAF) and the Ministry of Environment and Forestry (MOEF). The highest number of MPAs in Indonesia (89 MPAs) are established under category VI IUCN or district-based MPA. In this category, MPA is implemented by conserving ecosystems with cultural values and traditional natural resources management systems.

In other words, in this area, utilization of marine resources is available to exploit on the condition that the activities are carried out with sustainable use of natural resources. MMAF has managed a marine nature park (3 MPAs), a marine national park (1 MPA) and a marine tourism park (6 MPAs).⁵³

The marine nature park, marine national park and marine tourism park are a combination; the protection measures are aimed at ecological processes of category II and VI IUCN. These areas can be accessed for educational and research purposes. MOEF has administered marine nature preservation (6 MPAs), marine wildlife preservation (5 MPAs), marine recreational park (14 MPAs) and marine national park (7 MPAs).⁵⁴ Marine nature preservation aligns with category I (a) IUCN, where human activities are limited. The purpose is to protect marine biodiversity and geological or geomorphological features. At the same time, marine recreational parks and marine national parks are aligned with categories II and VI IUCN. MMAF has also established ten national MPA as learning sites managed by the Central Government.⁵⁵

The ten National MPA established through ministerial decrees were considered appropriate for several points. They legislate through national law, which includes conservation goals, location map, coordinate points, total coverage area, management authorisation (under the Directorate General of Marine, Coastal and Small Island), zonation plan, biodiversity profile, socio-economy aspects, strategy to overcome

⁵¹ Article 1 (12) BBNJ Agreement. ‘United Nations General Assembly, A/CONF.232/2023/2, Intergovernmental Conference on an International Legally Binding Instrument under the United Nations Convention on the Law of the Sea on the Conservation and Sustainable Use of Marine Biological Diversity of Areas beyond National Jurisdiction.’ 3 <<https://documents-dds-ny.un.org/doc/UNDOC/GEN/N22/467/94/PDF/N2246794.pdf?OpenElement>> accessed 5 March 2023.

⁵² Article 1 (4) BBNJ Agreement: “Areas beyond national jurisdiction” means the high seas and the Area.

⁵³ ‘Tabel Jumlah Dan Luas Kawasan Konservasi 2014-2019.Pdf’ <<https://kkp.go.id/an-component/media/upload-gambar-pendukung/djprl/FOTO/Tabel%20Jumlah>

[%20dan%20Luas%20kawasan%20konservasi%202014-2019.pdf](#)> accessed 5 January 2023.

⁵⁴ *Ibid.*

⁵⁵ Anambas and surrounding sea Marine Recreational Park (Riau Archipelago), Pieh and surrounding sea Marine Recreational Park (West Sumatera), Kapoposang Islands Marine Recreational Park (South Sulawesi), Gili Ayer, Gili Meno, and Gili Trawangan Marine Recreational Park (West Nusa Tenggara), Sawu Sea Marine Recreational Park (East Nusa Tenggara), Banda Sea Marine Recreational Park (Maluku), Raja Ampat Island Marine Nature Sanctuary (West Papua), West Waigeo Archipelago Marine Nature Sanctuary (West Papua), Southeast Aru Archipelago Marine Nature Sanctuary (Maluku), and Padaido Archipelago Marine Recreational Park (Papua).

environmental issues, and action plan in conserving marine biodiversity.

Unfortunately, due to limited access, Provincial or District MPA cannot be examined and included in this article. According to the Central Statistics Agency (BPS), eight types of Indonesian MPA have different conservation purposes, zonation system rules, management systems and institutional authority.

As stated above, MMAF Regulation 31/2020 was enacted as the implementation regulation specifically for managing MPA. MMAF Regulation No. 31/2020 comprises fifty articles with the scope of work, including the conservation area plan, establishment of the conservation area, utilisation of conservation area, supervision of conservation area, evaluation of conservation area, and finances of the conservation area.⁵⁶

It also includes five supplementary documents or appendices.⁵⁷ The primary purposes of conservation area management, as stated in this regulation, are to protect, preserve and utilise biodiversity or fish resources and traditional cultural sites.⁵⁸ This article shows the direct association between the conservation of marine biodiversity and fish resources conservation. The

conservation area plan⁵⁹ shall apply in the coastal area, small islands, territorial waters (internal waters, archipelagic waters and territorial sea),⁶⁰ and jurisdictional area (contiguous zone, Indonesia's EEZ, and continental shelf).⁶¹

Indonesian MPAs can be classified into three categories: the park, sanctuary, and maritime conservation area. Each category is supplemented with descriptions and explanations regarding each category's purposes, functions, and types.⁶² Park and sanctuary categories adopted the IUCN's Category V and VI, which combines protection, preservation, and utilisation of marine resources.⁶³

While Maritime Conservation Area is designated to protect, preserve, and use traditional cultural sites. The primary objective of Category VI is to protect natural ecosystems and use natural resources sustainably when conservation and sustainable use can be mutually beneficial.⁶⁴ This objective has been incorporated in articles 2 (a) and (b). The three categories of Indonesian MPA can be established in the coastal area, small islands, and IFMA. Their functions can indicate the distinction between the three categories of the conservation area. Park has the function of

⁵⁶ Article 3 MMAF Regulation No. 31/2020.

⁵⁷ Appendix I: Transfer of certain area (wholly or partially) from traditional community to the government or district government to be managed (minutes of handover); Appendix II: Technical Agreement Format, the response of the MMAF on the initial proposal document of the conservation area; Appendix III: Public consultation (minutes of handover); Appendix IV: Format of the plan of conservation area management; Appendix V: List of permitted activities, prohibited activities, and permitted activities with certain conditions, including utilization provisions in the conservation area

⁵⁸ Article 2 MMAF Regulation No.31/2020.

⁵⁹ Article 4 (1) MMAF Regulation No.31/2020.

⁶⁰ Article 4 (2) MMAF Regulation 3 No.1/2020.

⁶¹ Article 4 (2) MMAF Regulation 3 No.1/2020.

⁶² Article 6 MMAF Regulation No.31/2020.

⁶³ Day and others (n 18) 27.

Category VI describes as "Areas that conserve ecosystems and habitats, together with associated cultural values and traditional natural resource management systems. They are generally large, with most of the area in a natural condition, where a proportion is under sustainable natural resource management and where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area."

⁶⁴ *Ibid.*

maintaining and improving the quality of biodiversity. The sanctuary's function is to maintain and improve the quality of fish resources.

The role of the maritime conservation area is to support and increase the value of maritime cultural heritage and traditional values or local wisdom.⁶⁵ Determination of marine conservation areas is divided into two levels of authority: national conservation areas and district conservation areas. The criteria to determine the status of the marine conservation area are exercised based on the authority's scope between the central government (refer to the MMAF – Article 1 (19) MMAF Regulation No. 31/2020) and the district government.⁶⁶

The criteria for conservation areas within the government control are principally divided into two approaches: location-specific and values-based. The location-specific based approach specifies that the government's authority will automatically apply in the area outside territorial waters and within the jurisdictional area, including the conservation area located within two or more authorities (cross-provincial or cross-state). The value-based approach indicates the conservation target, such as highly migratory species and shipwrecked area which has already obtained international status.

MMAF has established ten conservation areas which are recognised as national conservation areas, divided into National

Tourism Park (6), National Marine Sanctuary (3), and National Marine Park (1).⁶⁷

Three national conservation areas clearly state the IUCN's category, category V (two MPAs) for protecting the conservation of important landscapes and limiting interactions of human activities through traditional or local practices, and category VI (one MPA). The rest of the national MPAs did not specify which IUCN category they referred to. The zonation on conservation area correlates with the conservation functions following the area's potential.

Any conservation area must retain a zonation conservation area that includes the core zone (the fully and highly protective conservation target), the restricted utilisation zone (sustainable fisheries and tourism activities), and other designated zones.⁶⁸ The management plan for the conservation area must be consulted (technical consultation). It can be reviewed periodically as long as it does not affect the coverage area, the function of the conservation area or the purpose of the conservation area (figure shown in Appendix VIII).⁶⁹

The administrator of the conservation area management is under the authorisation of the Ministry for national conservation area and the Governor for the district conservation area.⁷⁰ The utilisation of marine conservation areas can be conducted as long as these activities comply with the regulation of conservation area utilisation. Eight specific activities are included in article 38 (1) MMAF Regulation No. 31/2020, categorised into three activities: permitted

⁶⁵ Article 7 (2), 8 (2), and 9 (2) MMAF Regulation No.31/2020.

⁶⁶ Central Government defines as "Central Government, from now on referred to as the Government, is the President of the Republic of Indonesia who holds the power of the government of the Republic of Indonesia, assisted by the Vice President and ministers as referred to in the 1945 Constitution of the Republic of Indonesia". Article 1 (17) MMAF Regulation No.31/2020.

⁶⁷ 'KKP | Kementerian Kelautan Dan Perikanan' <<https://kkp.go.id/djprl/artikel/22288-peta-kawasan-konservasi-perairan-tahun-2019>> accessed 3 October 2022.

⁶⁸ Article 11 (1)(2)(3)(4) MMAF Regulation No.31/2020.

⁶⁹ Article 32 (4) MMAF Regulation No.31/2020.

⁷⁰ Article 34 MMAF Regulation No.31/2020.

activity, permitted activity with certain conditions, and prohibited activity.

Monitoring of the utilisation of conservation areas is also conducted in accordance with other related laws and regulations, one of them is the Directorate General of Marine Resources and Fisheries Regulation No. 11/PER-DJPSDKP/2017 regarding Technical Instruction of Supervision in Marine Conservation Area.⁷¹ The strategy of conservation area management is divided into four phases, middle-term plan I-IV is periodically assessed every five years and must include the output or milestone, management, conservation target, program indication, partnership and networking of conservation area management.

Furthermore, MMAF generates a system for the community to actively participate in supervising conservation area management. Implementing this system is regulated under MMAF Regulation No. 31/PERMEN-KP/2013 concerning Guidelines for Handling Whistleblower and Community Complaints.

In addition, the evaluation of the conservation area is carried out to assess the management objectives, which indicates in the plan documentation of the management conservation area and generate three outcomes as follows: (1) Achievement and performance of management in governance, biophysics, social, economic, and cultural aspects; (2) Compatibility and zonation effectiveness, strategy, program, and measures to achieve the aims and objectives of the management and (3)

Recommendation or improvement and conformation of the management.⁷²

However, there needs to be the further explanation regarding the evaluation step nor the measurement to determine the effectiveness of MPA. Therefore, the evaluation and monitoring of MPA according to MMAF Regulation No. 31/2020 need to be clarified.

The evaluation process emphasises eliminating the threats to the management, biophysics, social, economic, and cultural aspects.⁷³ There are no practices on how and when the monitoring and utilisation conservation areas according to MMAF Regulation No. 31/2020 until this article is written. However, it needs to be stressed that the importance of assessing MPA according to IUCN is to improve the performance of MPA through adaptive management, develop new strategic plans, improve MPA management and improve accountability and reporting.⁷⁴ MMAF Regulation No. 31/2020 has accommodated the first and third points from those lists.

It is necessary to note that Indonesia's obligation to submit a national report concerning the development of MPA can be used for other interrelated reports, such as biodiversity conservation and climate change adaptation and mitigation progress.

D. THE FUNCTION OF MPA AND FISHERIES CONSERVATION

One of the fundamental aims of establishing MPA is to protect habitat and marine biodiversity and improve viable fisheries.

⁷¹ Article 43 MMAF Regulation No.31/2020, Directorate General of Marine Resources and Fisheries Regulation No. 11/PER-DJPSDKP/2017 regarding Technical Instruction of Supervision in Marine Conservation Area, https://kkp.go.id/an-component/media/upload-gambar-pendukung/Ditjen%20PSDKP/Perdirjen-PSDKP-no.11-thn-2017-tentang-juknis-pengawasan-kawasan-konservasi-perairan_1.pdf

⁷² Article 44 (2) MMAF Regulation No. 31/2020.

⁷³ Article 45 MMAF Regulation No.31/2020.

⁷⁴ Robert S. Pameroy, John E Parks and Lani M Watson, 'How Is Your MPA Doing? A Guidebook of Natural and Social Indicators for Evaluating Marine Protected Area Management Effectiveness' 2–4 <<https://portals.iucn.org/library/sites/library/files/documents/PAPS-012.pdf>>.

Conservation of marine habitats will provide essential life-support processes of marine biological diversity and ensure fisheries resources are accessible to control.⁷⁵

Despite its true objective to conserve marine biodiversity, several studies indicate that MPA and fisheries have a strong correlation. Fisheries conservation and MPA share a similar approach in terms of the sustainable use of marine resources. The Ecosystem Approach to Fisheries Management (EAFM)⁷⁶ was developed through stages to integrate the environmental aspect into fisheries management.

It is reflected in the 1972 Stockholm Declaration, 1982 United Nations Convention on the Law of the Sea (UNCLOS),⁷⁷ 1992 Rio Declaration and Agenda 21 adopted by UNCED, 1994 Convention on Biological Diversity, 1995 United Nations Fish Stocks Agreement, and 2002 World Summit on Sustainable Development. The EAFM was first recognised internationally in the 2001 Reykjavík Conference on Sustainable Fisheries in the Marine Ecosystem, followed by the 2002 WSSD and applied the approach

to the WSSD Plan of Implementation.⁷⁸ FAO defines EAF as:

*“An ecosystem approach to fisheries strives to balance diverse societal objectives by taking into account the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries”.*⁷⁹

From the definition above, it can be observed that EAF addresses two conceptions of biodiversity conservation and fisheries management.⁸⁰ EAF plays a significant role in implementing sustainable development, particularly the application of sustainable fisheries. More importantly, the definitions reflect the holistic approach in addressing human and ecological well-being by focusing on biodiversity, ecosystem function, and fisheries management to ensure food security, including providing a livelihood for humans.⁸¹ The three pillars of sustainable development, environmental, economic and social, are accommodated under the EAFM conception.

In Indonesia, Fisheries management is stipulated under Article 7-13 of Law No 31/2004 jo. Law No. 45/2009 on Fisheries specifies that MMAF has the authority to establish a fisheries management plan by determining the potential and allocation of fisheries resources in Indonesian Fisheries Management Areas (IFMA),⁸² settling on the

⁷⁵ Graeme Kelleher, 'Guidelines for Marine Protected Areas' [1999] IUCN, Gland, Switzerland and Cambridge, UK. xxiv +107pp., xvii.

⁷⁶ Herein after referred to as 'EAFM'.

⁷⁷ Under the Economic Exclusive Zone (EEZ) regime, UNCLOS stipulates that coastal states must conserve and manage marine resources by involving scientific evidence to determine the total allowable catch (TAC), capacity to harvest and maintain the stock by preventing over-exploitation (Articles 61 (1) and (2)). Furthermore, UNCLOS requires the coastal State to maintain or restore harvestable species populations at levels that can produce the maximum sustainable yield (MSY) (Article 61 (3)).

⁷⁸ G Bianchi and HR Skjoldal, *Ecosystem Approach to Fisheries* (CABI 2008) 21 <<http://ebookcentral.proquest.com/lib/abdn/detail.action?docID=408054>> accessed 20 October 2022.

⁷⁹ 'Executive Summary' <<https://www.fao.org/3/Y4470E/y4470e05.htm#TopOfPage>> accessed 20 October 2022.

⁸⁰ Bianchi and Skjoldal (n 78) 24.

⁸¹ *Ibid.*

⁸² Herein after referred to as 'IFMA'.

total allowable catch (TAC)⁸³ in IFMA, determining fishing gears, fishing location, fishing lanes or fishing seasons, preventing fishing activities which causes pollution and destructive fishing activities, determining protected fish species, including establishing MPA and international cooperation. The total allowable catch (TAC) and maximum sustainable yield (MSY)⁸⁴ are determined after considering the recommendation of the National Commission on Fisheries is reflected in the integration of a scientific-based approach to fisheries management.⁸⁵ The principles adopted in the mandated articles above cover almost all the basic principles of EAFM.⁸⁶

Law No 1/2014 of Coastal Area and Small Islands Management provides the conservation measures to ensure the sustainability of coastal areas and small islands' resources and ecosystems, including marine biodiversity, marine biota migration routes and preserving traditional cultural sites.⁸⁷ Furthermore, this law acknowledges the rights of traditional communities to conduct their traditional activities under the traditional laws.⁸⁸

The law also explicitly mentions the traditional communities with special integration in the coastal areas and small islands, such as sasi, mane'e, panglima laot, and awig-awig.⁸⁹ However, there is a common practice in eastern Indonesia of Maluku, Papua and West Papua in claiming

the water areas, but Law No 1/2014 does not acknowledge this practice.⁹⁰

The EAFM concept is facilitated by Law No 1/2014 concerning the protection of the marine ecosystem, planning and establishing conservation management for various objectives, not fisheries in specific. Omnibus Law No. 11/2020 does not amend the abovementioned fundamental elements. The traditional communities remain to have access to conduct marine utilisation and contribution to marine spatial planning in the area, including the right to propose traditional area management, access to information, objection and file a lawsuit and other rights that accommodate the fundamental rights of local communities.⁹¹ Participation of affected people or relevant stakeholders from fisheries management is recognised as the central element of EAFM and sustainable development.

The facilitation of local communities in establishing fisheries management regulated by Law No. 1/2014 can be considered the implementation of EAFM. Intersectoral cooperation between government, local or district government, ministries, and other stakeholders is the primary framework for EAFM. Biodiversity conservation covers a wide range of ecosystems and habitats from terrestrial areas to high seas. Intersectoral coordination is important to promote, and integration into the ecosystem approach provides a framework of principles and guidelines, including establishing MPA, fisheries management measures and species-protection measures.⁹²

E. INDONESIAN FISHERIES MANAGEMENT AREAS (IFMA)

Based on MMAF Regulation No. 18/PERMEN-KP/2014 concerning the

⁸³ Herein after referred to as 'TAC'.

⁸⁴ Herein after referred to as 'MSY'.

⁸⁵ Article 7 (4) Law No. 31/2004 jo Law No. 45/2009.

⁸⁶ Umi Muawanah and others, 'Review of National Laws and Regulation in Indonesia in Relation to an Ecosystem Approach to Fisheries Management' (2018) 91 Marine Policy 150, 155.

⁸⁷ Article 1 (20) and 28 Law No. 1/2014

⁸⁸ Muawanah and others (n 86) 155 Article 60 Law No. 1/2014.

⁸⁹ Article 28 (4) Law No. 1/2014.

⁹⁰ Muawanah and others (n 86) 155.

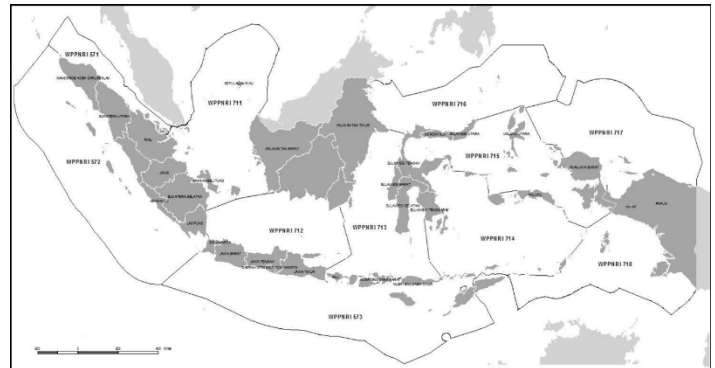
⁹¹ Article 60 No. 11/2020 Regarding Job Creation.

⁹² Bianchi and Skjoldal (n 78) 45.

Fisheries Management Area of the Republic of Indonesia, Indonesia has established eleven IFMAs covering 6,4 km² of the Indonesian water area.⁹³ As shown in the map below, the IFMA covers the entire Indonesian water area from internal waters, archipelagic waters, territorial sea, contiguous zone and Indonesian EEZ.⁹⁴ The objectives of IFMA are to manage capture fish activity, fish cultivation, fisheries conservation, research and development.⁹⁵ Preliminary observations from the map below show that all Indonesian MPAs are within the IFMAs. The question arises as to whether there are any correlations between MPA and IFMA in terms of the conservation of fish resources and marine biodiversity in achieving the international obligation.

*Map of eleven IFMA.*⁹⁶

572	Indian Oceans in the West Sumatera and Sunda Strait
573	Indian Oceans in the South Java to South Nusa Tenggara, Sawu Sea, and West of Timor Sea
711	Karimata Strait, Natuna Sea and North Natuna Sea
712	North Java Sea
713	Makasar Strait, Bone Bay, Flores Sea and Bali Sea
714	Tolo Bay and Banda Sea
715	Tomini Bay, Maluku Sea, Halmahera Sea, Seram Sea and Berau Bay
716	Celebes Sea and North Halmahera Island
717	Candrawasih Bay and Pacific Oceans
718	Aru Sea, Arafuru Sea, and East Timor Sea



IFMA Location based on MMAF Regulation 18/2014:

IFMA	Location
571	Malacca Strait and Andaman Sea

The efforts to strengthen governance and implement maritime activities can be examined as Indonesia's commitment to implement SDG 14 targets for Ocean Ecosystems (Life Below Water).⁹⁸

The enactment of MMAF Regulation 22/2021 is the outcome of Law No 11/2020 Regarding Job Creation and Article 41 of the Government Regulation 27/2021. It regulates fisheries activities in Indonesian water,

⁹³ 'KKP | Kementerian Kelautan Dan Perikanan' <<https://kkp.go.id/djpt/ditpsdi/page/5052-rpp-da-n-lpp-wppnri>> accessed 19 October 2022.

⁹⁴ Article 1 (8) MMAF Regulation 22/2021.

⁹⁵ Article 1 MMAF Regulation 18/2014.

⁹⁶ Appendix 1 MMAF Regulation 18/2014.

⁹⁷ Presidential Decree No. 18/2020; Strengthening the management of maritime, fisheries and marine, Strategy I.

⁹⁸ *Ibid.*

including the EEZ and inland waters, such as rivers, lakes, reservoirs, swamps, and ponds.⁹⁹ This article limits and discusses the provisions in regard to internal water, archipelagic water, territorial sea and EEZ and excludes inland water fisheries.

According to MMAF Regulation 22/2021, the fisheries management plan includes the integrated process of collecting information, analysis, planning, consultation, decision-making, fish resource allocation, implementation and enforcement of fisheries laws and regulations.¹⁰⁰ The management plan considers the fisheries status and strategic fisheries management plan within the IFMA; therefore, each of these eleven IFMAs has distinctive management plans, depending on the location and fish species.¹⁰¹

Fish with important economic values, included in the CITES appendix, protected, endemic, vulnerable and endangered species are considered to establish the fisheries management plan.¹⁰² Moreover, the fisheries status as the important element should comprehend the fisheries resources, which include potential estimation, TAC, MSY and fish resources allocation.¹⁰³

The fisheries management plan and strategic fisheries management plan should also consider the environmental, social economy, and governance aspects and be regularly updated. The five-year action plan is established to achieve the objectives of the fisheries management plan,¹⁰⁴ and evaluation of the plan is conducted at least once in two years.¹⁰⁵

Accordingly, scientific evidence has a significant role in designating a fisheries

management plan in Indonesia. The Fisheries Management Commission is appointed and has authority under MMAF Regulation 22/2021 from the planning, implementation, and evaluation stages.¹⁰⁶ A scientific panel assists the Commission in formulating the management plan based on scientific results and consultative panels to facilitate stakeholders' participation and aspirations, such as traditional or local institutions and non-governmental organizations, including marine and fisheries associations.¹⁰⁷

One of the main principles in establishing a fisheries management plan is the ecosystem approach to fisheries; consequently, conservation measures are inserted, for instance, to estimate fish resource allocation by determining the TAC in IFMA.¹⁰⁸ Furthermore, the TAC must take into account fisheries resources sustainability and its environment.¹⁰⁹ The MMAF Regulation No. 22/2021 further instructs the establishment of a Working Group of Fish Resources Utilization and Conservation, appointed in every IFMA, to conduct analysis coordination, monitoring and evaluation.¹¹⁰

The MMAF Regulation No. 22/2021 focuses on the management of IFMA and the authority's work. Despite the violation prevailing within the IFMAs, this regulation does not include the surveillance procedures nor the sanctions applied to the offender. The MMAF Regulation No. 47/2020 regarding the Duty of Fisheries Supervisor fills the gap in the law enforcement task. The fisheries supervisor has the main authority to perform

⁹⁹ Article 1 (9) MMAF Regulation 22/2021.

¹⁰⁰ Article 1 (4) MMAF Regulation 22/2021.

¹⁰¹ Article 1 (7) and Article 2 (2) MMAF Regulation 22/2021.

¹⁰² Article 2 (4) MMAF Regulation 22/2021.

¹⁰³ Article 4 (2)(a) MMAF Regulation 22/2021.

¹⁰⁴ Article 16 (1) MMAF Regulation 22/2021.

¹⁰⁵ Article 25 (1) MMAF Regulation 22/2021.

¹⁰⁶ Article 43 (2) MMAF Regulation No. 22/2021.

¹⁰⁷ Article 44-46 MMAF Regulation No. 22/2021.

¹⁰⁸ Article 3 and Article 8 (1) MMAF Regulation No. 22/2021.

¹⁰⁹ Article 6 (1) MMAF Regulation No. 22/2021.

¹¹⁰ Article 38 (1) MMAF Regulation No. 22/2021. The other two commissions are mandated under the regulation: the Working Group of Data and Information and the Working Group of Supervision and Enforcement.

the action on violations occurring in IFMA by implementing surveillance patrols and monitoring the movement of fishing vessels.¹¹¹

In light of fisheries conservation, however, the surveillance applies limited to pollution and does not apply to any violation of MPA regulation.

F. APPRAISAL OF INDONESIAN FISHERIES CONSERVATION: THE INTEGRATION OF MPA AND IFMA

There is commonly misunderstanding that biodiversity conservation through MPA and fisheries management are unrelated. The MPA category, which includes the no-take zone, is typically misunderstood as the general type of MPA. Furthermore, MPA and fisheries management are generally assumed as two distinctive conservation measures with different goals and adopting different approaches.

From a different perspective, MPA and fisheries management can be observed to share the same approach, which is the ecosystem approach.¹¹² Until 2005, most published MPA guidance focused on biodiversity conservation and excluded the fisheries management perspective.¹¹³ The Twenty-Sixth Session of the Food and Agriculture Organization (FAO) Committee of Fisheries (COFI) developed the guidelines which accommodate the implementation of MPA in relation to fisheries to fill the gap.¹¹⁴ FAO does not directly imply MPA characteristics in the Code of Conduct for Responsible Fisheries; however, it recognized MPA's contribution to achieve sustainable fisheries by applying the EAF.¹¹⁵

¹¹¹ Article 8 and 9 (2) MMAF Regulation No. 47/2020.

¹¹² Food and Agriculture Organization of the United Nations (n 14) 2.

¹¹³ *Ibid.*

¹¹⁴ *Ibid.*

¹¹⁵ *Ibid.*, 9.

Particular attention must be given to the fact that there is a lack of correlation between Indonesian MPAs and IFMAs. MPA and FMA's objectives are identical: protecting and preserving fish resources. There would be a possibility of a conflict between MPA and fishing activities, specifically if the MPA applied categories I-III which are highly protected areas and associated with no-take zones.¹¹⁶ Indonesian MPA primarily applies category VI, where fish conservation and utilisation are maintained sustainably.

The national medium-term plan, RPJMN (2020-2024), was passed under Presidential Decree No. 18 of 2018 and contains four appendices. The RPJMN is mainstreaming the SDGs targets, including its indicators, and it can be acknowledged that the seventeen goals of SDG have integrated and are indivisible within the RPJMN.¹¹⁷ Marine and fisheries affairs are included in developing economic infrastructure and ensuring food security by advancing fisheries management.

To achieve sustainable fisheries, the RPJMN focus on capture fisheries which consider the MSY value and eliminate the constraints by strengthening management and institutionalisation of IFMAs, optimising fisheries productivity and harmonising marine spatial planning, particularly in the coastal areas and small islands.¹¹⁸ In Addition, in 2019, Indonesia established MPA covering 20.9 million hectares, and MPA is expected to be expanded to 26.9 million hectares in 2024.¹¹⁹

There are five strategies for the enhancement of the management in fisheries and marine. These are (1) appointing IFMA as the spatial basis in sustainable fisheries, institutional

¹¹⁶ Day and others (n 18) 31.

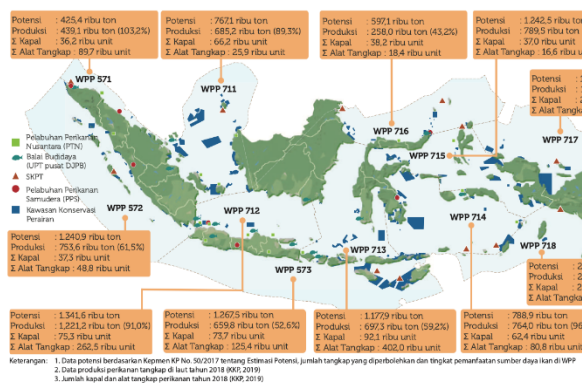
¹¹⁷ Appendix 1 Presidential Decree 18/2018, Direction of National Long-Term Development Plan 2005-2025, pg. 17.

¹¹⁸ *Ibid.*, 73-74.

¹¹⁹ *Ibid.*, 83.

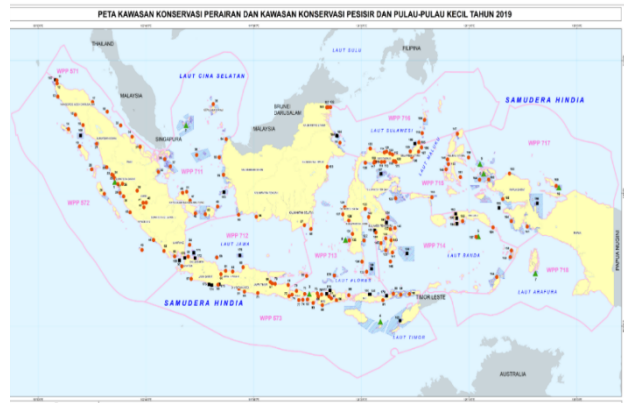
transformation and IFMA's function, advancement of IFMA's management quality, management of marine spatial planning and coastal zonation plan; (2) Management of marine ecosystem and sustainable marine services; (3) improving production, productivity, standardisation, quality control and safety of fisheries and marine products; (4) improving business facilitation, financial, technology and market, improving the welfare and empowerment of integrated fishermen; protection of small-scale marine and fisheries businesses; and (5) improving the quality and competence of human resources, marine technological innovation, research and databases on marine and fisheries.¹²⁰

IFMAs databases.¹²¹



The orange box on the map above shows the TAC and the percentage of utilization rates in eleven IFMAs based on MMAF Decision No. 50/2017. It also displays the fishing vessels and gears in the unit scales. The navy box indicates the MPA established within the IFMAs; however, there is no further explanation regarding the effectiveness of these MPAs, except the plan to utilize the resources in a sustainable manner.

MPA's location within the Indonesian Fisheries Management Area.¹²²



The map above shows the Indonesian MPA distribution (2019) within the eleven IFMAs, in the coastal area and small islands, which are classified as National MPAs (green square), district MPA (red dot), and MPA managed by MOEF (black square). This map also indicates several location designated as MPA located in territorial water or Archipelagic Water, within the IFMA 573, 711, 713, 714, 715, 716, 717 and 718.

The most recent MMAF Decision No. 19 of 2022, concerning the Estimation of Potential Fish Resources, Total Allowable Catch, and the Utilization of Fish Resources in IFMA, presented capture fish resources' potential estimation, divided into nine groups of species. The collected data determine fisheries resource allocation and has been calculated and reviewed periodically at least once in three years.¹²³ Further, the enactment of MMAF Decision 19/2022 revoked the MMAF Decision 50/2017.¹²⁴ MMAF Decision No. 19/2022

¹²² 'KKP | Kementerian Kelautan Dan Perikanan' <<https://kkp.go.id/djprl/artikel/22288-peta-kawasan-konservasi-perairan-tahun-2019>>. accessed 3 October 2022.

¹²³ MMAF Decision No. 19/2022, Decision Three, 3.

¹²⁴ MMAF Decision No. 19/2022, Decision Four, *Ibid.*

¹²⁰ *Ibid.*, 91.

¹²¹ *Ibid.*, 118.

shows the table of fish resources classified as over-exploited is marked by $E > 1$, fully exploited by $0.5 < E < 1$, and moderate by $E < 0.5$.¹²⁵ Eight species are included in the report: small pelagic, large pelagic, demersal fish, coastal fish, penaeid shrimp, lobster, crab, crustacea and squid.

According to the MMAF Decision No. 19/2022, most IFMAs (eight of eleven) are over-exploited on coastal fish species. IFMA 571 is classified as moderate, while IFMA 711 and 712 are fully exploited.¹²⁶ IFMA 573 is also observed as having an exceeding number of over-exploited fish species and fully-exploited status. Similar conditions for over and fully-exploitation fish species also appeared in IFMA 711, followed by IFMA 714 and IFMA 718.¹²⁷ It can be observed that most IFMA encounters are entirely and over-exploited.

However, the utilisation level described by MMAF Decision 19/2022 needs to provide more detailed information regarding the social and economic aspects. It can be considered Indonesia's implementation to achieve sustainable fisheries, particularly the environmental factor. The environmental element is also essential in EAFM, specifically by improving the scientific understanding of the ecosystem, including the environmentally safe fishing gear and fishing vessels GT requirements.¹²⁸

IFMA	MPA	Moderate	Fully Exploited
571		2	2
572	2	3	1
573	4	1	4

¹²⁵ The explanation of the status indicator is provided in the Appendix of MMAF Decision No. 50/2017.

¹²⁶ Appendix of MMAF Decision No. 19/2022, 4-7.

¹²⁷ *Ibid.*

¹²⁸ Bianchi and Skjoldal (n 78) 27.

711	10		6	3
712	1	1	6	2
713	7	1	3	4
714			6	3
715			7	2
716	6	1	7	1
717		2	5	2
718			7	2

Status of fish utilization in IFMA 2022.

MMAF Regulation 22/2021 can be considered as one aspect required in EAFM to provide scientific evidence (TAC and MSY level) that enables sustainable development in fisheries. It also determines how Indonesia comply with the obligation to determine TAC and MSY under Article 61 (1) and (3) UNCLOS, including Paragraph 7.3.1 of the FAO Code of Conduct for Responsible Fisheries.¹²⁹

G. CONCLUSION

MPA strongly correlates with the concept of EAFM in terms of the parallel of its main objectives. EAFM was developed through stages to integrate the environmental aspect in fisheries management. It is reflected in fundamental international marine biodiversity and fisheries conservation instruments. EAFM plays a significant role in implementing sustainable development, particularly the application of sustainable fishing. Indonesia's practices show that the TAC and MSY are determined after considering the recommendation of the Commission on Fisheries is reflected in the integration of a scientific-based approach to fisheries management. The principles adopted in the mandated articles cover the basic principles of EAFM. The law also explicitly mentions the traditional

¹²⁹ 'Code of Conduct for Responsible Fisheries, Food and Agriculture Organization 1995' 9 <<https://www.fao.org/3/v9878e/v9878E.pdf>>. accessed 21 October 2022.

communities with special integration in the coastal areas and small islands (sasi, mane'e, panglima laot, and awig-awig).

Participation of impacted communities from MPA is recognised as the central element of EAFM and sustainable development. The objectives of IFMA are to manage capture fish activity, fish cultivation, fisheries conservation, research and development. The efforts to strengthen governance and implement maritime activities can be examined as Indonesia's commitment to implement SDG 14 targets for Ocean Ecosystems (Life Below Water). The management plan considers the fisheries status and strategic fisheries management plan within the IFMA; therefore, each of these eleven IMFAs has specific management plans, depending on the location and fish species.

The fisheries management plan and strategic fisheries management plan should also consider the environmental, social economy, and governance aspects and be regularly updated. One of the main principles in establishing a fisheries management plan is the ecosystem approach to fisheries; consequently, conservation measures are inserted, for instance, to estimate fish resource allocation by determining the TAC in IFMA. Furthermore, the TAC must consider fisheries resources sustainability and its environment. The fisheries supervisor has the leading authority to act on violations within the IFMA by implementing surveillance patrols and monitoring the movement of fishing vessels. In light of fisheries conservation, however, the surveillance applies only to pollution and not to violating MPA regulations.

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