# COMMUNITY-LED MARINE OECMS: ASSESSING ENABLING REGULATORY FRAMEWORKS AND POTENTIAL CASES IN INDONESIA

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## ABSTRACT

The Convention on Biological Diversity's Kunming-Montreal Global Biodiversity Framework (KM-GBF) calls for conserving at least 30 percent of the planet through protected areas or Other Effective Area-based Conservation Measures (OECMs) by 2030. OECMs can complement Marine Protected Areas by recognising diverse forms of management delivering biodiversity benefits regardless of their objectives. A key barrier to their implementation is a lack of legal clarity on OECM identification, recognition, and monitoring at the national level. To address this, we examine Indonesia's marine and forestry regulations in the context of OECM criteria, identifying opportunities to adapt existing policies to support the recognition of community-led marine areas as OECMs. These regulations generally align well with Criterion A (non-protected area) and Criterion B (active governance), but gaps remain in addressing effectiveness in conserving biodiversity (Criterion C) and associated ecosystem services and socio-cultural values (Criterion D). Building on this analysis, we evaluated three Locally Managed Marine Areas in Indonesia to assess how the OECM framework could support on-ground management practices. These case studies showed conservation effectiveness, with increases in resource availability (e.g. >65% more catch in two sites). Our findings underscore OECMs' potential as inclusive, adaptable models for advancing biodiversity targets in Indonesia and beyond.

**Keywords:** Enabling policies, Kunming-Montreal Global Biodiversity Framework, 30x30 target, community-led conservation, Marine OECMs

## INTRODUCTION

The Kunming-Montreal Global Biodiversity Framework (KM-GBF), adopted in December 2022, is a landmark decision under the Convention on Biological Diversity (CBD) that aims to halt and reverse biodiversity loss by 2030. Target 3 of the KM-GBF, also known as the '30x30' target, seeks to conserve at least 30 percent of the planet's terrestrial, inland water, and coastal and marine areas by 2030 (CBD, 2022). The framework acknowledges the critical role of Indigenous peoples and local communities to conservation, as first introduced in Article 8(j) of the CBD. However, area-based conservation efforts have historically relied on top-down governance, where decision-making authority rests primarily with government agencies (Gurney et al., 2023). These government-led conservation models often restrict local community participation, raising concerns about feasibility (Glaser et al., 2010), equity (Gurney et al., 2021) and ecological effectiveness (Bennett & Dearden, 2014; Sanchirico et al., 2002), especially in Global South countries.

The inclusion of Other Effective Area-Based Conservation Measures (OECMs) in Target 3 of the KM-GBF presents a key opportunity to diversify the area-based conservation toolbox and improve both effectiveness and equity of the conservation system (Gurney et al., 2021; Jonas et al., 2021; Maini et al., 2023). First introduced in the 2010 Aichi Targets, OECMs were formally defined under COP CBD Decision 14/8 as 'geographically defined areas that achieve long-term biodiversity conservation' (CBD, 2018). The key distinction between OECMs and MPAs is that MPAs are generally understood to have a primary objective of biodiversity conservation, whilst the definition of OECMs specifies no restrictions on objectives but specifies that they must be effective in conserving biodiversity (CBD, 2018).

This flexibility of the OECM framework facilitates recognition of a diversity of management areas that contribute to biodiversity conservation regardless of their objectives, and as such, opens the door to recognising and strengthening existing management practices, including those led by communities (Dudley et al., 2018; Maini et al., 2023). Thus, the OECM framework provides a means to potentially strengthen bottom-up approaches, addressing some of the limitations of top-down approaches (Claudet et al., 2022). Community-led governance can enhance the effectiveness of conservation because it is tailored to its context and aligned with local values, governance and traditional knowledge systems. Its recognition through an OECM framework could potentially contribute to fostering equitable governance that contributes to communities' well-being, and through fostering local leadership, support and compliance lead to biodiversity conservation effectiveness (Gray, 2006; Gurney et al., 2021; Halim, 2020).

Despite its potential, the use of the OECM framework remains limited, with OECMs covering less than 1.2 per cent of land and freshwater environments and less than 0.2 per cent of marine areas (UNEP-WCMC & IUCN, 2025). Furthermore, to date, the majority of OECMs that have been reported to the World Database on OECMs are governed by government (although a large proportion are under shared governance) (Jonas, Bingham et al., 2024), raising questions about their promised utility of providing a means to recognise and support community-led governance (Jonas, Bingham et al., 2024). The slow uptake of the OECM framework, particularly for community-led managed areas, stems partly from a lack of legal and regulatory clarity surrounding their establishment and long-term governance (Jonas, Bingham et al., 2024; Paterson, 2023). Indeed, national-level contextualisation of OECMs remains mostly underexplored, leaving a gap in understanding how global frameworks like the KM-GBF can be translated into practical, effective and localised implementation strategies (Estradivari et al., 2022). The success of Target 3 depends on countries adapting their regulatory frameworks to accommodate OECMs, taking into account national legal, bureaucratic and socio-cultural contexts (Jonas, Bingham et al., 2024).

Indonesia exemplifies both the challenges and opportunities for implementing community-led OECMs, particularly in the marine context. Its coral reefs are among the most biodiverse on Earth (Glaser et al., 2010), and small-scale fisheries, which contribute 60 per cent of national fish production and support over 12,000 coastal villages, are critical to food security (MMAF, 2016). The strong cultural and economic reliance of Indonesia's coastal communities on marine resources, combined with supportive marine affairs regulations (Dudayev et al., 2023), has enabled the identification of over 390 potential marine OECM sites (Estradivari et al., 2022). By leveraging community-led management practices, OECMs in Indonesia could complement traditional MPAs by addressing gaps in top-down governance and facilitating the use of local knowledge and institutions in biodiversity conservation (Estradivari et al., 2024).

Despite these opportunities, Indonesia's marine governance remains predominantly top-down (Satria & Matsuda, 2004). Coastal communities often face insecure tenure rights, which undermine their capacity for sustainable resource management (Adhuri et al., 2022). Critics of this command-and-control governance model highlight the lack of adequate fisheries expertise within government agencies, which limits their ability to manage marine resources effectively (Gray, 2006; Kooiman, 1999). Furthermore, while Indonesia has nearly achieved its national target of 10 per cent MPA coverage, none of its MPAs are considered sustainably managed (Meilana et al., 2023). As of 2021, many locally governed LMMAs in Indonesia lacked national recognition and thus were not reported towards the Global Biodiversity Framework, despite having legal status at the provincial level (Handayani et al., 2022). These governance challenges highlight the urgent need to alter regulatory frameworks to better enable and support community-led management and formally recognise their contribution to national conservation strategies.

**Table 1.** The CBD criteria and sub-criteria for identifying OECMs (CBD 14/8; Jonas, Wood et al., 2024)

| CBD criteria for OECMs | CBD sub-criteria for OECMs |
|---|---|
| **Criterion A: Area is not currently recognised as a protected area** | ● Not a protected area |
| **Criterion B: Area is governed and managed** | ● Geographically defined space<br>● Legitimate governance authorities<br>● Managed |
| **Criterion C: Achieves sustained and effective contribution to in situ conservation of biodiversity** | ● Effective<br>● Long-term<br>● In situ conservation of biological diversity<br>● Information and monitoring |
| **Criterion D: Associated ecosystem functions and services and cultural, spiritual, socio-economic and other locally relevant values** | ● Ecosystem functions and services<br>● Cultural, spiritual, socio-economic and other locally relevant values |

In response, national initiatives led by the Ministry of Marine Affairs and Fisheries (MMAF) and a consortium of NGOs are advancing a 30x30 roadmap[1] that positions OECMs as a key mechanism to achieve 10 per cent marine area conservation by 2030 and 30 per cent by 2045. The Indonesian Biodiversity Strategic Action Plan 2025–2045 further includes OECMs in Target 3 (protected area coverage) and Target 17 (community participation), which emphasises inclusive public participation and equitable access to biodiversity planning – commitments which are also embedded in the Medium-Term National Development Plan via Presidential Regulation No. 12/2025. Despite these national efforts, the slow uptake of OECMs in Indonesia and globally highlights two key barriers: (i) a lack of legal and regulatory clarity surrounding their recognition and governance, and (ii) insufficient national contextualisation that translates the OECM framework into an effective, locally relevant conservation tool (Cook, 2024; Paterson, 2023). Addressing these challenges is critical for ensuring that OECM status is not merely a symbolic designation, rather that it represents recognition of managed areas that deliver biodiversity benefits (Gurney et al., 2021; Hoffman, 2022; Ólafsdóttir et al., 2024). To address these gaps, we examine how Indonesia's legal frameworks can better support the implementation of community-led marine OECMs by bridging the gap between regulatory structures and local conservation practices. Through a combined legal analysis and case study approach, we assess how existing policies align with the CBD criteria for OECMs and provide practical insights into how community-led conservation efforts can be formally integrated into national conservation regulations and strategies. Our findings contribute to broader global discussions on OECM governance and offer actionable recommendations for CBD Parties working towards advancing the OECM framework in their own contexts.

1 Derived from the National Workshop on Guidance on Aquatic OECM in Indonesia (Definition of Criteria & Mapping of Potential OECM Sites) for the Conservation of Ecosystems and Aquatic Biota in Indonesia (Lokakarya Nasional Panduan OECM Perairan di Indonesia (Definisi Kriteria & Pemetaan Lokasi Potensi OECM) untuk Konservasi Ekosistem dan Biota Perairan di Indonesia), held on 27 March 2024 by the Ministry of Marine Affairs and Fisheries (MMAF) in collaboration with the OECM Consortium (WWF, CTC, RARE, YPL, KI and Rekam).

## METHODS

This paper employs a dual analytical approach to explore the enabling conditions for implementing community-led marine OECMs in Indonesia: a legal review (*de jure*) and a case study evaluation (*de facto*). The legal review assesses how Indonesia's regulatory frameworks align with the CBD criteria for OECMs (Table 1), while the case studies explore real-world applications of these frameworks.

### Legal review

We analyse Indonesia's marine and forestry regulatory frameworks against the CBD criteria for OECMs (CBD, 2022). The legal review evaluated eight regulations, ranging from national acts to derivative regulations (Kelsen, 1991) selected based on their relevance to marine and natural resource governance in Indonesia and their potential to facilitate community-led marine OECMs' implementation. We assessed forestry as well as marine regulatory frameworks, as some marine ecosystems are governed under forestry regulations, including mangrove management and social forestry, which can cover mangrove areas. These regulations were analysed using thematic content analysis (Aynalem & Vibhute, 2005) to identify gaps, opportunities and conflicts in applying the OECM criteria as the basis of the analysis.


**Figure 1.** Location of Ccase Sstudies: Sinaka Village, West Sumatera; Sungai Piyai Village, Riau; and Akoon Village, Maluku (dark circles). Darker grey land area represents the Republic of Indonesia.

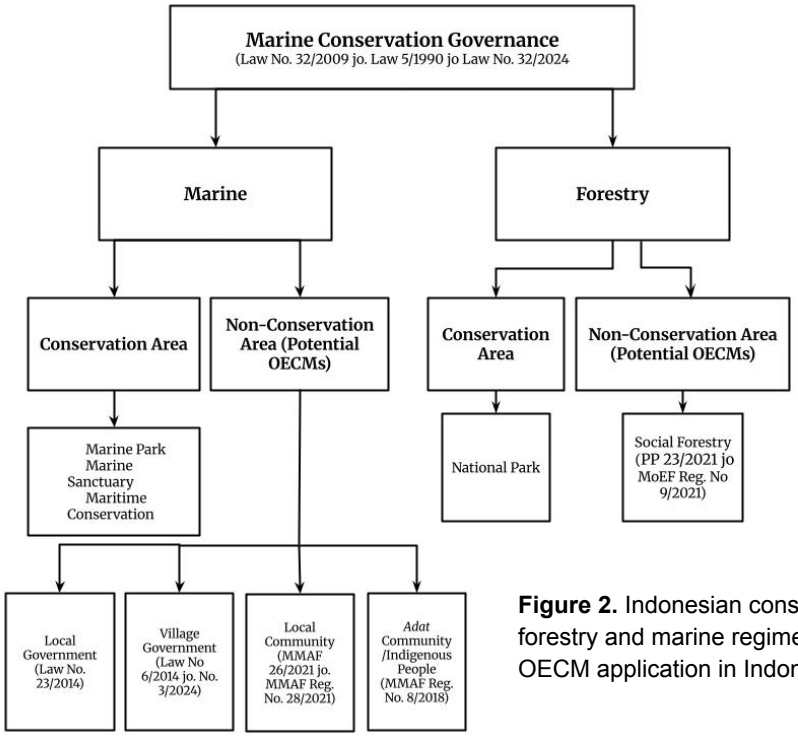



**Figure 2.** Indonesian conservation governance framework, including forestry and marine regimes potentially enabling community-led marine OECM application in Indonesia (see Supplementary Online Material)

## Case study analysis

The case study component of the analysis assessed whether existing community-led marine management practices align with the OECM criteria. Three villages – Sinaka, Sungai Piyai and Akoon Villages – located in West Sumatra, Riau and Maluku Provinces (Figure 1), were selected as case studies based on their distinct local governance models and different regulatory pathways for potential OECM recognition. These case studies were analysed for their adherence to the OECM criteria, focusing on spatial boundaries, biodiversity outcomes, governance structures and socio-economic impacts. Data for the case study analysis were gathered through a literature review of the academic and grey literature, including project reports.

# RESULTS

## Marine conservation governance in Indonesia

Indonesia's marine conservation is governed under Law 32/2009 jo 5/1990 jo 32/2024, allowing forestry and marine affairs authorities to share responsibility for managing different types of conservation areas (Figure 2). This structure creates two main conservation pathways. Firstly, marine governance, which is overseen by the Ministry of Marine Affairs and Fisheries (MMAF)

**Table 2.** Existing Indonesian regulations that could potentially support OECM recognition and their degree of alignment with CBD criteria for OECMs

| Regulations | Scheme | Criterion A Spatial management but not a protected area | Criterion B Active governance and management | Criterion C Biodiversity conservation effectiveness | Criterion D Socio-economic values |
|---|---|---|---|---|---|
| **MMAF Reg. 26/2021** | Rehabilitation of coastal ecosystems (e.g. mangroves, seagrass) with minimum two-year period | Yes (ecosystem management zone) | Yes (private/local community) | Partially (no guarantee beyond rehabilitation phase) | Partially (does not require the recognition of biodiversity-associated socio-cultural values) |
| **MMAF Reg. 28/2021** | PKKPRL[1] Permits for communities using marine space | Yes (utilisation area specifically for tourism) | Partially (governance body not explicitly mentioned and lacking guidelines for enforcement) | Partially (but limited to tourism and artificial reef preservation) | Partially (Unclear scope of permitted conservation activities) |
| **MMAF Reg. 8/2018 jo MoHA Reg. No. 52/2014** | Recognition of Indigenous (*adat)* community rights | Yes (utilisation area – *Adat* zone) | Yes (*Adat* community) | Yes (though not explicitly stated) | Yes (explicitly stated) |
| **Law 6 2014 jo 1/2014** | Village autonomy to manage natural resources | Yes (utilisation area for ecosystem management, fisheries or tourism) | Yes (village government) | Partially (in ecosystem management, fisheries, or tourism zones). | Yes (explicitly stated) |
| **PP2 23/2021 jo MOEF Reg. No 9/2021** | Social forestry | Yes (production forest for non-timber utilisation) | Yes (village government / community) | Yes (increase resource availability with potential biodiversity benefits) | Yes (for community needs, not commercial use) |
| **Law 23/2014** | Provincial authority to delegate marine management to communities | Yes (utilisation area for ecosystem management, fisheries or tourism) | Yes (village government / community) | Yes (based on cases from Southeast Sulawesi Province) | |

While Indonesia does not yet have a regulatory framework specifically for OECMs, several existing regulations create the enabling conditions for their recognition. These regulations outline governance structures and spatial boundaries – both foundational for OECM designation – but they remain fragmented and insufficient in their current form. Instead, they govern areas designated for non-conservation purposes that nonetheless possess clear governance arrangements and the potential to contribute to in-situ biodiversity outcomes. This creates a legal opening for OECM recognition within Indonesia's current system, even in the absence of formal OECM provisions.

1 Spatial Utilisation Activity Agreement Approval

2 Government Regulation or *Peraturan Pemerinta*h (PP)

and local governments, covers marine parks, coastal sanctuaries and areas managed through *adat* and local community schemes. Secondly, forestry governance, which is managed by the Ministry of Forestry (MoF), includes mangrove conservation, marine zones within national parks, and social forestry programmes.

Indonesia embraces legal pluralism, where informal marine governance systems – such as *sasi* or community-agreed rules – are considered legitimate and coexist with formal structures, playing a vital role in regulating access and use through local norms, customary enforcement and collective decision-making (Dudayev et al., 2023). Beyond these formally recognised areas, both governance mechanisms have local conservation initiatives and community-led management schemes that, while not formal conservation areas, can contribute to biodiversity

conservation. These mechanisms provide important pathways for recognising potential community-led conservation efforts, including OECMs (Figure 2; Table 2). Although potential community-led OECMs are not explicitly recognised in Indonesian law, these existing legal frameworks in both marine and forestry regime provide possible pathways for their recognition, particularly within non-conservation areas that still contribute to biodiversity conservation.

### Analysis of regulatory frameworks

Table 2 presents key existing regulations (see Supplementary Online Material) that could potentially enable the management of marine natural resources outside of formal conservation areas in Indonesia. These regulations have been analysed using CBD criteria for OECMs, focusing on their legal provisions for spatial delineation, biodiversity conservation, governance structures and socio-economic benefits.

While Indonesia does not yet have a regulatory framework specifically for OECMs, several existing regulations create the enabling conditions for their recognition. These regulations outline governance structures and spatial boundaries – both foundational for OECM designation – but they remain fragmented and insufficient in their current form. Instead, they govern areas designated for non-conservation purposes that nonetheless possess clear governance arrangements and the potential to contribute to in-situ biodiversity outcomes. This creates a legal opening for OECM recognition within Indonesia's current system, even in the absence of formal OECM provisions.

Several sectoral regulations in Indonesia provide partial enabling conditions for the recognition of community-led OECMs. These include regulations issued by the MMAF, MoF, Ministry of Villages Disadvantaged Regions and Transmigration, Ministry of Home Affairs (MoHA), as well as relevant local and village government frameworks. The regulations span areas such as ecosystem rehabilitation, village autonomy, social forestry, customary law and marine spatial planning. All align with Criterion A. Many also demonstrate alignment with one or more additional OECM criteria, particularly by enabling local governance (Criterion B) and supporting potential biodiversity conservation outcomes (Criterion C) and integrating socio-cultural values (Criterion D) (see Supplementary Online Material for full analysis of regulations).

## CASE STUDIES

The analysis of the case studies – Sinaka, Akoon and Sungai Piyai Villages – demonstrates their alignment with the CBD criteria for OECMs. Each case showcases distinct governance models and conservation approaches, illustrating the role of community-led management in biodiversity conservation while supporting local livelihoods. Although formal OECM recognition remains in early stages in Indonesia, these cases show strong commitment to sustainable management practices that align with OECM principles (Table 3).

### Sinaka Village

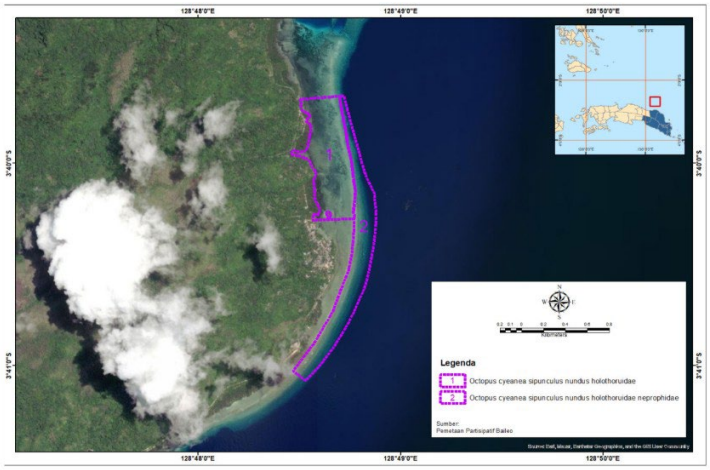
Sinaka Village, located in West Sumatra Province, lies within a utilisation area outside formal protected areas (Criterion A). The village has implemented community-led octopus fisheries management based on local agreements, an approach aligned with Criterion B, as it prevents overharvesting and supports marine biodiversity recovery. Between March 2021 and March 2022,[2] the community, especially women, conducted a data-driven assessment of octopus populations before introducing temporary fishing closures. Catch per unit effort (CPUE) data reflected an increase from 3.5 kg/

2 Data collection was conducted with the assistance and support of Yayasan Citra Mandiri Mentawai, a local civil society organisation (CSO) based in West Sumatra.

**Table 3.** Community-led marine management case studies' alignment with the CBD criteria for OECMs

| Village | Criterion A<br>Spatial management but not a protected area | Criterion B<br>Active governance and management | Criterion C<br>Biodiversity conservation effectiveness | Criterion D<br>Socio-economic values |
|---|---|---|---|---|
| Sinaka Village | Yes (Utilisation Area Zone) | Yes (local community and village government) | Yes (but requires longer management evaluation) | Yes (but requires further evaluation) |
| Akoon Village | Yes (*Adat* Zone) | Yes (*adat* community) | | Yes (managed for spiritual purposes) |
| Sungai Piyai Village | Yes (Production Forest Zone) | Yes (forestry community group) | | Yes (follows traditional management practices but needs further evaluation) |

Fishers and village government discussed locally-managed marine area regulation in Sinaka Village © Rayhan Dudayev




Marine Management Area in Akoon Village © Baileo Foundation

trip to 6.2 kg/trip between March and September 2022, demonstrating the effectiveness of the closures.

Governance in Sinaka is strengthened by Village Regulations based on the Mentawai Islands Regent Regulation No. 51/2019, ensuring clear management structures. The regulation grants local organisations (such as Gaba Ibara, Nulu Takep, and Saksak) the authority to enforce sustainable fishing practices and manage marine resources through temporary closures. By formalising these regulations, the village government has clarified governance structures and strengthened local authority, addressing ambiguities that previously hindered effective policy implementation. This governance structure mirrors the Managed Access with Reserves (MA+R) approach, which enables the effective management of coastal fisheries in an ecosystem context (Domondon et al., 2021). The management system also meets Criterion D, as it integrates traditional ecological knowledge and customary practices, resulting in the provision and protection of ecosystem services and associated socio-cultural values, for example ecosystem services provision ensuring food security. Sinaka exemplifies how small-scale fisheries governance can align with OECM principles, offering a model for community-led fisheries management that has historically[3] been constrained by centralised governmental control.

3 Bailey and Zerner (1992) examined community-led fisheries management in Indonesia and concluded that local management systems often face significant challenges due to centralised control by higher government authorities, which limits their effectiveness. Similarly, Satria and Matsuda (2004) also argue that centralisation, as enforced in Indonesia, has proven ineffective in addressing the complexities of local fisheries management, further underscoring the need for decentralised approaches.

Release of fisheries resource in Akoon Village by Raja (chief of Akoon Village) © Stevi Talahatu

## Akoon Village

Located in Maluku Province, Akoon Village lies within a designated utilisation area outside formal protected areas (Criterion A). The village manages a 2.7-hectare area through a traditional management system termed '*Sasi laut*'. The system involves temporarily closing certain fishing areas (Adhuri et al., 2022) to ensure sustainable harvesting of species such as octopus, sea snail (*Trochus niloticus* – locally known as '*Lola*'), sea cucumber, lobster and marine worm (*Sipunculus nudus)* – locally known as '*Sia-Sia*') (Criterion C), all of which are crucial to the community's livelihood (Adhuri et al., 2022). Octopus, a key commodity in Akoon, is often harvested before maturity, threatening its sustainability. Similarly, Endangered, Threatened and Protected species such as *lola*, lobster, sea cucumber, and *sia-sia* have been overexploited, causing population declines and limiting community access to these culturally and economically significant resources (Adhuri et al., 2022).

The *Sasi* system, which enforces temporary closures, has contributed to improved stock availability in Akoon, as reflected in a 2020 monitoring period average CPUE of 2.01 kg/trip, representing a 66 per cent increase over the annual average of 1.21 kg/trip indicating measurable ecological outcomes from customary closures (Criterion C) (Rufiati et al., 2021). The governance structure under *Sasi* (Criterion B) is rooted in the *adat* village structure, with the *Kewang* (traditional environmental guards) overseeing resource use and compliance with sustainable practices. This governance is formalised through village-level regulations and aligns with national policy, particularly MMAF Regulation No. 8/2018, which acknowledges environmental management of *Adat* communities to manage their traditional territories. Akoon also meets Criterion D, as seasonal closures under the *Sasi* system sustain ecosystem functions while preserving cultural practices and livelihoods tied to marine biodiversity, including women's roles in gleaning, trading and data collection.

Symbol of Sasi (Prohibition to use resources) © Dedi Adhuri

## Sungai Piyai Village

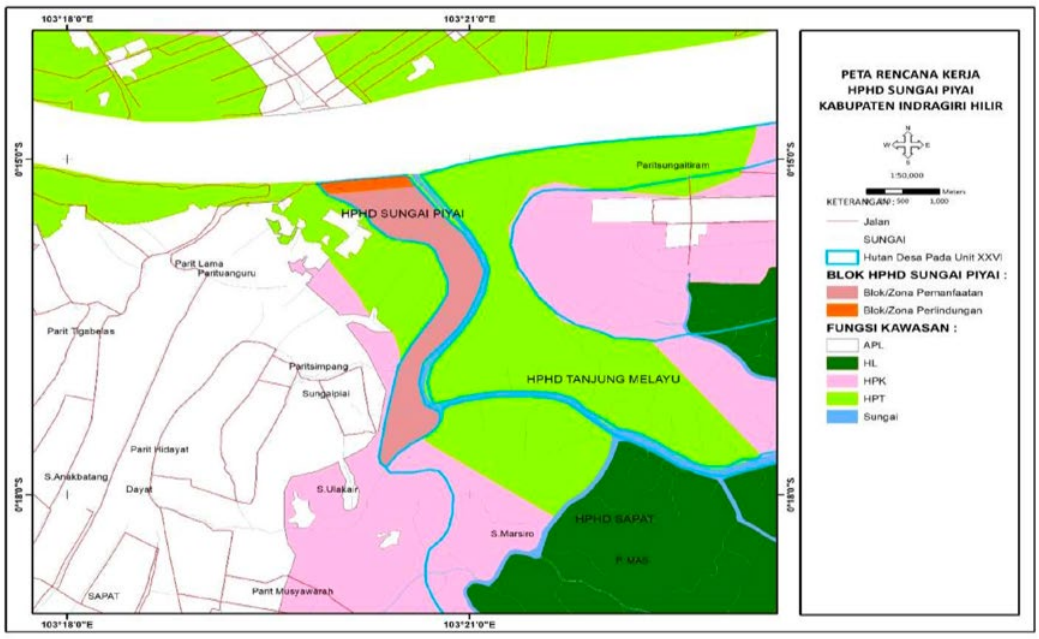
Sungai Piyai Village in Riau Province manages a 299-hectare social forestry area under the Village Forest scheme, designated by the MOF Decree[1]. Governed by the MoEF Regulation No. 9/2021, the scheme is located in a limited production forest (Criterion A), and integrates local community involvement through the Lembaga Pengelola Hutan Desa (LPHD). This community-led organisation enforces sustainable resource practices to prevent overfishing, restore mangroves and maintain ecological protection, aligning with Criterion C. Governance is formalised through LPHD bylaws, granting clear management authority (Criterion B). This governance model integrates traditional and modern conservation practices, ensuring that resource use remains sustainable. The social forestry scheme also delivers socio-economic benefits (Criterion D) by integrating sustainable fisheries, agroforestry and non-timber forest product harvesting, with women actively engaged in harvesting and processing shrimp, while LPHD collaborates with social forestry enterprises to train fishers in stock management and support local businesses. By balancing conservation with economic viability, Sungai Piyai demonstrates how social forestry can align with OECM criteria, though its applicability to marine and coastal OECMs remains underexplored.

1 SK.6730/MENLHK-PSKL/PKPS/PSL.0/12/2017

Sungai Piyai - Sapat Community-based Management Building © Galih Nur Fitriyani

## Comparative synthesis

All three case studies demonstrated strong community-led governance (Criterion B), formalised through *adat* institutions, village regulations or social forestry schemes. Each also maintained clearly defined spatial boundaries outside formal protected areas (Criterion A). While environmental monitoring in Sungai Piyai was primarily based on local perceptions, mangrove




*Gambar 3.1. Peta Rencana Kerja Wilayah Kelola HD Sungai Piyai.*

Management Area and Plans in Sungai Piyai © Yayasan Mitra Insani

restoration efforts have contributed to improved habitat quality and fisheries recovery. In Sinaka, CPUE increased by 77 per cent, from 3.5 to 6.2 kg/trip within three months of implementing collaborative octopus closures, while in Akoon, CPUE rose by 66 per cent during the 2020 monitoring period under the *Sasi* system both demonstrating the ecological benefits of community-enforced seasonal closures (Criterion C) and acting as catalysts for broader management (MA+R) systems that warrant further evaluation (Domondon et al., 2021). Socio-economic benefits (Criterion D) were evident across all sites, where ecosystem services (e.g. sustainable fisheries, mangrove restoration) supported food security, diversified livelihoods, and women's active (though often informal) participation, despite formal state recognition of these contributions remaining limited. Common challenges include insufficient ecological data, unclear national reporting pathways, especially for marine-linked social forestry, and the need for stronger regulatory support. These cases collectively illustrate how community-led models can meaningfully contribute to OECM objectives alongside MPAs, especially in areas where local legitimacy and customary governance are prevalent.

## Challenges for community-led OECMs in Indonesia and future directions

OECMs offer a promising approach to biodiversity conservation but face significant challenges in Indonesia. The newly enacted Conservation Law No. 32/2024 expands Indonesia's conservation framework by recognising Preservation Areas that can be considered as OECMs. However, Indigenous groups have challenged the law in the Constitutional Court, citing inadequate participation in its drafting and a lack of recognition for community-led conservation. The court has suspended the law's implementation, emphasising the need for a law that supports community-led conservation based on Free, Prior and Informed Consent (FPIC) (Constitutional Court of Indonesia, 2024).

Another major hurdle is obtaining site recognition, as even when areas meet OECM criteria, legal recognition remains challenging due to competing interests and the need for integration into marine spatial planning (MSP) and high-level political decisions – mirroring the struggles of customary marine areas (Dudayev et al., 2023; Queffelec et al., 2021), which may explain why most reported OECMs are governed by government (Jonas, Bingham et al., 2024). Community areas are often excluded from MSP because the process is typically technocratic, and conducted in provincial capitals, making it difficult for remote communities to participate – particularly when their areas lack formal recognition. Integrating community marine areas into national and provincial MSP through participatory approaches is a crucial enabling condition for community-led OECMs to ease tenure insecurity challenges.

A key challenge remains reconciling diverse conservation perspectives, as the Western-centric OECM framework may conflict with Indigenous and local community knowledge systems (Gurney et al., 2021; Gurney et al., 2023). To support the growing role of OECMs in Indonesia, we recommend three actions for the Government of Indonesia, NGOs and practitioners:

- Establish clear legal pathways to recognise community -led OECMs and secure local governance and tenure by adapting marine and forestry governance frameworks, integrating them into marine spatial planning, and institutionalising traditional knowledge.
- Recognise and support long-term socio-economic and cultural benefits of community-led OECMs and align them with local development goals.
- Enhance biodiversity monitoring in community-led areas to support locally relevant outcomes and national reporting.

## CONCLUSION

We assessed the extent to which Indonesia's existing regulatory frameworks enable the recognition of community-led marine OECMs. Our analysis found that the regulatory frameworks, in principle, allow for *adat* and local communities to, in principle, govern OECMs in non-protected areas where governance structures and spatial demarcation already exist. This is particularly evident in ecosystem-based management, tourism, and fisheries zones. However, regulatory refinement is needed to strengthen alignment with OECM Criterion C (long-term biodiversity outcomes) and Criterion D (outcomes for associated ecosystem services and socio-cultural values), while Criteria A and B are generally aligned, with only one regulation requiring adjustment to fulfil Criterion B (active management and governance). In practice, many community-led marine areas already demonstrate positive socio-ecological outcomes. To fully unlock the potential of community-led OECMs, improvements are needed in legal and political recognition, consistent application of FPIC, and institutional support for capacity building and equitable governance and sharing of benefits and costs among diverse actors, including those that are often excluded (e.g. women, youth). Addressing these gaps will require not only regulatory reform but also a stronger empirical foundation to inform policy and implementation. Future research should examine how community-led OECMs perform over time in delivering biodiversity outcomes, and how these areas can be integrated meaningfully into Indonesia's national conservation strategy. Community-led marine OECMs represent a critical opportunity to advance more just, inclusive and sustainable approaches to conservation – both within Indonesia and globally. Ensuring their recognition and support is vital for realising the full ambition of Target 3 of the KM-GBF.

## ABOUT THE AUTHORS

**Rayhan Dudayev** is a PhD candidate at James Cook University studying how traditional knowledge is integrated into marine management, with a focus on equity and marine policy. He has a background in law and marine affairs, and has worked on small-scale fisheries and environmental governance across Southeast Asia, especially Indonesia.

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**Thomas Gammage** is a PhD candidate at James Cook University studying equity in conservation co-management in Indonesia. With a background in marine ecology and international environmental policy, his research explores how justice perspectives can be better understood and integrated into marine governance to support more inclusive, effective conservation.

**Georgina Gurney** is a senior research fellow in environmental social science and an Australian Research Council DECRA Fellow whose research examines the governance of conservation. Her current research programme examines the sociocultural and institutional drivers and human wellbeing outcomes of such initiatives, with a particular focus on equity and fairness.

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## REFERENCES

Adhuri, D. S., Dudayev, R., Pane, B., Jodho, P. I., Ukru, J., Widodo, C., Paino, C., Mangkau, Z., Wantah, E., … Dasaluti, T. (2022). *Laut Kita, Kita Kelola Bersama: Potret Tata Kelola Kelautan Kolaboratif di Tingkat Tapak oleh Masyarakat Lokal, Pemerintah Desa, dan Masyarakat Adat.* Yayasan Pesisir Lestari with funding support from Blue Ventures.

Aynalem, F., & Vibhute, K. (2005). *Legal research methods. Teaching Material*, p. 17.

Bailey, C., & Zerner, C. (1992). Community-based fisheries management institutions in Indonesia. *Maritime Studies, 5*(1), 1–17.

Bennett, N. J., & Dearden, P. (2014). Why local people do not support conservation: Community perceptions of marine protected area livelihood impacts, governance and management in Thailand. *Marine Policy, 44*, 107–116. https://doi.org/10.1016/j.marpol.2013.08.017

Claudet, J., Ban, N., Blythe, J., Briggs, J., Darling, E., Gurney, G. G., Palardy, J. E., Pike, E. P., Agostini, V. N., … Morgan, L. (2022). Avoiding the misuse of other effective area-based conservation measures in the wake of the blue economy. *One Earth*, 5(9), 969–974. https://doi.org/10.1016/j.oneear.2022.08.010

CBD. (2018). OECM guidance (Doc. CBD/PA/EM/2018/1/INF/4).

CBD. (2022). Kunming-Montreal Framework (Decision 15/4).

Cook, C. N. (2024). Progress developing the concept of other effective area-based conservation measures. *Conservation Biology*, 38(1), e14106. https://doi.org/10.1111/cobi.14106

Constitutional Court of Indonesia. (2024). Interim Decision No. 32-PS/PUU-XXII/2024.

Domondon, P. R., Tirona, R. S., Box, S., & Pomeroy, R. (2021). Pathways to establishing managed access and networks of reserves. *Marine Policy*, 130, 104580. https://doi.org/10.1016/j.marpol.2021.104580

Dudayev, R., Hakim, L., & Rufiati, I. (2023). Participatory fisheries governance in Indonesia: Are octopus fisheries leading the way? *Marine Policy*, 147, 105338. https://doi.org/10.1016/j.marpol.2022.105338

Dudley, N., Jonas, H., Nelson, F., Parrish, J., Pyhälä, A., Stolton, S., & Watson, J. E. (2018). The essential role of other effective area-based conservation measures in achieving big bold conservation targets. *Global Ecology and Conservation*, *15*, e00424.

Estradivari, Firdaus, M. F. A., Adhuri, D. S., Ferse, S. C. A., Sualia, I., Andradi-Brown, D. A., Campbell, S. J., Iqbal, M., Jonas, H. D., … Ahmadia, G. N. (2022). Marine conservation beyond MPAs: Towards the recognition of other effective area-based conservation measures (OECMs) in Indonesia. *Marine Policy*, 137, 104939. https://doi.org/10.1016/j.marpol.2021.104939

Estradivari, E., Kartika, I., Adhuri, D. S., Adrianto, L., Agung, F., Ahmadia, G. N., Bejarano, S., Campbell, S. J., Fachri, F. R. ... & Ferse, S. C. (2024). Prospective ecological contributions of potential marine OECMs and MPAs to enhance marine conservation in Indonesia. *Ocean and Coastal Management*, 258, 15.

Glaser, M., Baitoningsih, W., Ferse, S. C. A., Neil, M., & Deswandi, R. (2010). Whose sustainability? Top–down participation and emergent rules in marine protected area management in Indonesia. Marine Policy, 34(6), 1215–1225. https://doi.org/10.1016/j.marpol.2010.04.006

Gray, T. S. (Ed.). (2006). *Participation in fisheries governance* (Vol. 4). Dordrecht: Springer.

Gurney, G., Darling, E. S., Ahmadia, G., Agostini, V., Ban, N., Blythe, J., Claudet, J., Epstein, G., Estradivari, … Jupiter, S. (2021). Biodiversity needs every tool in the box: Use OECMs. *Nature*, 595(7868), 646–649. https://doi.org/10.1038/d41586-021-02041-4

Gurney, G., Adams, V. Álvarez-Romero, J. & Claudet, J. (2023). Area-based conservation: Taking stock and looking ahead. *One Earth*, 6(2): 98–104.

Halim, A., Loneragan, N. R., Wiryawan, B., Fujita, R., Adhuri, D. S., Hordyk, A. R., & Sondita, M. F. A. (2020). Transforming traditional management into contemporary territorial-based fisheries management rights for small-scale fisheries in Indonesia. *Marine Policy,* 116, 103923

Handayani, C. N., Andradi-Brown, D. A., Ford, A. K., Beger, M., Hakim, A., Muenzel, D. K., Carter, E., Agung, F., Veverka, V. ... Ahmadia, G. N. (2022). The rapid expansion of Indonesia's marine protected area requires improvement in management effectiveness. *Marine Policy*, 146, 105257.

Hoffmann, S. (2022). Challenges and opportunities of area-based conservation in reaching biodiversity and sustainability goals. *Biodiversity and Conservation,* 31, 325–352. https://doi.org/10.1007/s10531-021-02340-2

Jonas, H. D., Ahmadia, G. N., Bingham, H. C., Briggs, J., Butchart, S. H. M., Cariño, J., Chassot, O., Chaudhary, S., Darling, E.,... von Weizsäcker, C. (2021). Equitable and effective area-based conservation: Towards the conserved areas paradigm. PARKS, 27(1), 7–24. https://doi.org/10.2305/IUCN.CH.2021.PARKS-27-1HJ.en

Jonas, H. D., Bingham, H. C., Bennett, N. J., Woodley, S., Zlatanova, R., Howland, E., Belle, E., Upton, J., Gottlieb, B., … Ruiz, L. (2024). Global status and emerging contribution of other effective area-based conservation measures (OECMs) towards the '30x30' biodiversity Target 3. *Frontiers in Conservation Science*, *5*, 1447434.

Jonas, H. D., Wood, P., & Woodley, S. (Eds.). (2024). *Guidance on other effective area-based conservation measures (OECMs)*. IUCN WCPA Good Practice Series, No. 36. Gland, Switzerland: IUCN.

Kelsen, H. (1991). *General theory of norms* (M. Hartney, Trans.). Oxford: Clarendon Press.

Kooiman, J. (1999). Experiences and opportunities: a governance analysis of Europe's fisheries. In *Creative Governance* (pp. 141–170). Routledge.

Maini, B., Blythe, J. L., Darling, E. S., & Gurney, G. G. (2023). Charting the value and limits of other effective conservation measures (OECMs) for marine conservation: A Delphi study. *Marine Policy*, 147, 105350. https://doi.org/10.1016/j.marpol.2023.105350

Meilana, L., Fang, Q., Susanto, H. A., Widiastutik, R., Syaputra, D. E., Ikhumhen, H. O., Sholihah, R., Hakim, A., Yang, S., & Liu, Z. (2023). How Indonesian marine protected areas (MPAs) are doing: A management performance-based evaluation. *Biological Conservation*, 282, 110033. https://doi.org/10.1016/j.biocon.2023.110033

Ministry of Marine Affairs and Fisheries of the Republic of Indonesia. (2016). Regulation No. 47/2016 Concerning Marine Capture Fisheries Estimates. Jakarta.

Ólafsdóttir, G. Á., Henke, T., Chambers, C. P., & Ólafsdóttir, S. H. (2024). Gaps in legislation and communication identified as stakeholders reflect on 30×30 policy in Icelandic waters. *Marine Policy*, 170, 106422. https://doi.org/10.1016/j.marpol.2024.106422

Paterson, A. (2023). Other effective area-based conservation measures, biodiversity stewardship and statutory intervention – A South African perspective. *Potchefstroom Electronic Law Journal*, 26, (Published on 13 June 2023) pp 1–31. https://doi.org/10.17159/1727-3781/2023/v26i0a15441

Queffelec, B., Bonnin, M., Ferreira, B., Bertrand, S., Teles Da Silva, S., Diouf, F., Trouillet, B., Cudennec, A., Brunel, A., … Toonen, H. (2021). Marine spatial planning and the risk of ocean grabbing in the tropical Atlantic. *ICES Journal of Marine Science*, 78(4), 1196–1208. https://doi.org/10.1093/icesjms/fsab006

Rufiati, I., Hakim, L. L., Dudayev, R., Juwana, S., Gianova, G., Wisudo, S. H., Riyanto, M., & Arnold, A. (2021). *Executive summary – Resource potential and opportunities for octopus fisheries management in Indonesia.* Pesisir Lestari, Indonesia Ocean Justice Initiative, & Blue Ventures.

Sanchirico, J. N., Cochran, K. A., & Emerson, P. M. (2002). *Marine protected areas: economic and social implications.* Washington DC: Resources for the Future.

Satria, A., & Matsuda, Y. (2004). Decentralization of fisheries management in Indonesia. *Marine Policy*, 28, 437–450. http://ledhyane.lecture.ub.ac.id/files/2015/05/satria-decentralization-fisheries-manager.pdf

UNEP-WCMC & IUCN. (2025). Protected Planet. Retrieved from https://www.protectedplanet.net/en

## RESUMEN

El Marco Global de Biodiversidad Kunming-Montreal (KM-GBF) del Convenio sobre la Diversidad Biológica hace un llamamiento a para conservar al menos el 30 por ciento del planeta mediante áreas protegidas u Otras Medidas Eficaces de Conservación Basadas en Áreas (OECMs) para 2030. Las OECM pueden complementar las áreas marinas protegidas al reconocer diversas formas de gestion que aportan beneficios a la biodiversidad independientemente de sus objetivos. Uno de los principales obstáculos para su aplicación es la falta de claridad jurídica sobre la identificación, el reconocimiento y el seguimiento de las OECM a escala nacional, que se puede consultar en. Para abordar esta cuestión, examina la normativa marina y forestal de Indonesia en el contexto de los criterios de las OECM, identificando oportunidades para adaptar las políticas existentes para apoyar el reconocimiento de las áreas marinas dirigidas por las comunidades como OECM. En general, estas normativas se ajustan bien al Criterio A (zona no protegida) y al Criterio B (gobernanza activa), pero siguen existiendo lagunas en que abordan la eficacia en la conservación de la biodiversidad (Criterio C) y los servicios ecosistémicos asociados y los valores socioculturales (Criterio D). Sobre la base de este análisis, evaluamos tres áreas marinas gestionadas localmente en Indonesia para valorar cómo el marco OECM podría apoyar las prácticas de gestión sobre el terreno. Estos estudios de caso mostraron eficacia de la conservación, con aumentos en la disponibilidad de recursos (por ejemplo, >65% más de capturas en dos sitios). Nuestros hallazgos subrayan el potencial de las OECM como modelos inclusivos y adaptables para avanzar en los objetivos de biodiversidad en Indonesia y más allá.

## RÉSUMÉ

Le Cadre mondial pour la biodiversité Kunming-Montréal (KM-GBF) de la Convention sur la diversité biologique appelle à conserver au moins 30 % de la planète par le biais de zones protégées ou d'autres mesures efficaces de conservation par zone (OECM) d'ici à 2030. Les OECM peuvent compléter les aires marines protégées en reconnaissant les diverses formes de gestion qui apportent des avantages en termes de biodiversité, quels que soient leurs objectifs. L'un des principaux obstacles à leur mise en œuvre est le manque de clarté juridique OECM en ce qui concerne l'identification, la reconnaissance et le suivi des OECM au niveau national. Pour y remédier, nous examinons sur les réglementations maritimes et forestières indonésiennes dans le contexte des critères OECM, en identifiant les possibilités d'adapter les politiques existantes pour soutenir la reconnaissance des aires marines gérées par les communautés en tant qu'OECM. Ces réglementations s'alignent généralement bien sur le critère A (zone non protégée) et le critère B (gouvernance active), mais des lacunes subsistent sur en ce qui concerne l'efficacité de la conservation de la biodiversité (critère C) et des services écosystémiques associés ainsi que des valeurs socioculturelles (critère D). Sur la base de cette analyse, nous avons évalué trois zones marines gérées localement en Indonésie pour évaluer comment le cadre de l'OECM pourrait soutenir les pratiques de gestion sur le terrain. Ces études de cas ont montré l'efficacité de la conservation, avec des augmentations de la disponibilité des ressources (par exemple, >65% de prises en plus dans deux sites). Nos résultats soulignent le potentiel des OECM en tant que modèles inclusifs et adaptables pour faire progresser les objectifs de biodiversité en Indonésie et au-delà.