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Assessing Community Readiness for OECM Implementation: Insights from Upland Forests and Coastal Lagoon Ecosystems in Vietnam

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ABSTRACT

Achieving Target 3 of the Kunming–Montreal Global Biodiversity Framework requires expanding effective area-based conservation beyond formally designated protected areas. Other Effective Area-based Conservation Measures (OECMs) have emerged as a mechanism for recognising durable conservation outcomes in landscapes governed outside protected area systems. This study examines community readiness for potential OECM recognition across two contrasting social–ecological systems in central Vietnam: coastal lagoon and upland forest communities. Grounded in the definition of Other Effective Area-based Conservation Measures (OECMs) under the Convention on Biological Diversity (CBD) Decision 14/8 and informed by IUCN–WCPA guidance, the study draws on evidence from 16 focus group discussions and 15 key informant interviews. Directed content analysis was employed using four analytical dimensions to capture cross-cutting social–ecological dynamics. Results reveal a marked divergence in OECM readiness. Upland forest communities demonstrate higher readiness, supported by legally recognised tenure, continuous patrol and monitoring practices, relatively stable financial mechanisms, and evidence of stable or recovering biodiversity. In contrast, coastal lagoon communities exhibit lower and more fragile readiness: initial improvements under co-management were not sustained once project-based support ended, amid increasing ecological pressures and declining fisheries resources. Variation within each region further underscores that OECM readiness is highly context-

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dependent and best assessed at the level of specific management units. Overall, the study highlights the central role of governance continuity, ecological context, and sustained resource support in operationalizing OECMs, offering empirical insights for advancing Target 3 beyond protected area systems.

Keywords: Other Effective Area-based Conservation Measures (OECMs); Community Readiness; Governance; Management Effectiveness; Biodiversity Contribution; Long-Term Sustainability; Social–Ecological Systems; Vietnam

1. Introduction

Global biodiversity is undergoing a severe decline. Approximately 47% of the extent and integrity of natural ecosystems has been lost or degraded, and an estimated one million species are currently at risk of extinction [1]. In response, many countries have adopted spatial expansion of conservation areas as a central strategy in recent years. This approach aligns with the Kunming–Montreal Global Biodiversity Framework, particularly Target 3, which calls for conserving and effectively managing at least 30% of terrestrial, inland water, coastal and marine ecosystems by 2030 [2].

To achieve this ambitious goal, other effective area-based conservation measures (OECMs), formally defined under CBD Decision 14/8 in 2018 [3], have increasingly been recognized as a critical instrument [4]. OECMs not only complement protected areas but also acknowledge the conservation value of managed landscapes beyond formal protected area systems.

Countries with high levels of biodiversity, where local communities maintain resource-management practices grounded in traditional knowledge, customary norms and ecosystem-dependent livelihoods, represent promising contexts for OECM development [4]. Numerous studies have further shown that territories governed by Indigenous peoples and local communities can deliver conservation outcomes that are comparable to, or in some cases exceed, those of formal protected areas [5,6]. Nonetheless, the effectiveness of such arrangements is contingent on socio-historical trajectories, governance mechanisms and ecological conditions specific to each geographic setting.

Vietnam provides a compelling case for examining the potential of OECM as a conservation tool due to its ecological diversity and the longstanding role of local communities in natural resource governance. Across the country, many community groups engage in ecosystem management through various institutionalized and customary arrangements that integrate village regulations, local norms and traditional practices [7,8].

In the North Central Region, two contrasting social-ecological systems, coastal lagoon communities and upland forest communities, offer favourable conditions for assessing comparative OECM readiness. Both systems display forms of localized governance aligned with OECM principles, yet the nature, effectiveness and long-term continuity of these arrangements may differ substantially.

To date, however, no study has systematically examined differences between coastal and upland communities in terms of their governance capacity, management practices, contributions to biodiversity and long-term sustainability in relation to criteria for OECM recognition. This lack of comparative evidence constrains policymakers and conservation planners in identifying and prioritizing areas with high potential for OECM recognition and development.

This study fills this gap by assessing OECM readiness in two contrasting social-ecological systems in central Vietnam. In doing so, it elucidates how ecological conditions and governance mechanisms interact to shape OECM readiness and provides an empirical basis for designing context-appropriate support policies and implementation pathways tailored to specific community settings.

2. Methods

2.1. Study Area and Policy Context

The study was conducted in Huế City (formerly Thừa Thiên Huế Province) and Quảng Trị Province (formed in July 2025 through the merger of the former Quảng Bình and Quảng Trị provinces), located in the North Central Region of Vietnam (**Figure 1**). These sites were selected to represent two contrasting social-ecological systems in central Vietnam: coastal lagoon communities concentrated in Huế City, and upland headwater communities distributed across both Huế City and Quảng Trị Province.

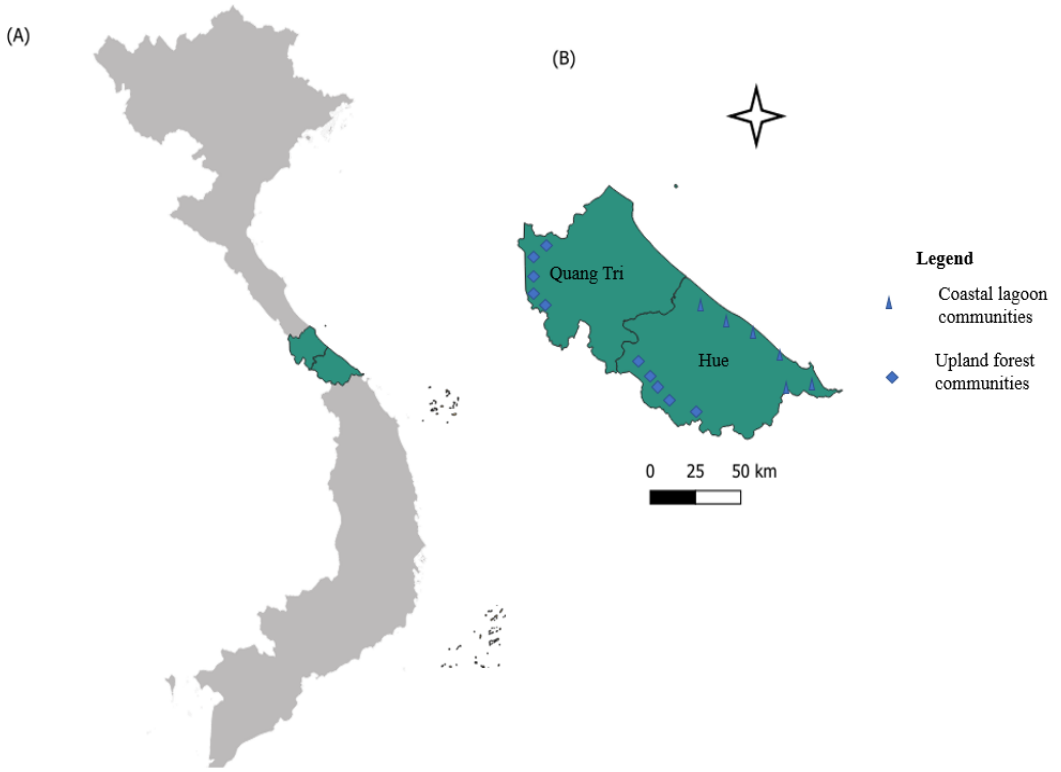

Figure 1. Study Area in Huế City and Quảng Trị Province, North-Central Vietnam.
Note: Panel (A) shows the national location of the study provinces, while Panel (B) presents a detailed view of the two provinces.

The coastal lagoon system of Huế is closely associated with the Tam Giang-Cầu Hai lagoon complex, one of the largest lagoon systems in Southeast Asia and a critical source of livelihood for local fishing communities [9,10]. Household livelihoods are primarily based on capture fisheries and aquaculture, supplemented by small-scale service activities related to the fishery [11]. In recent years, several communities have also developed community-based tourism as an additional income stream. Resource governance in the lagoon area involves the provincial Fisheries Association and its grassroots fisheries chapters through co-management mechanisms, shared access arrangements and community regulations. However, fisheries resources are under increasing pressure due to overexploitation, occupational competition, climate change and environmental pollution, contributing to heightened livelihood risks among local households [12].

The upland areas of Huế and Quảng Trị are home to multiple ethnic minority groups, including the Katu, Pa Cô, Tà Ôi and Vân Kiều. Livelihoods are generally household-based and rely on small-scale agricultural production such as maize, cassava and mixed livestock husbandry, including poultry, pigs and cattle. In addition, plantation forestry (primarily smallholder acacia plantations) provides an important income source. Communities participate in forest governance through two primary arrangements: Forest Protection Contracting (FPC), in which communities hold annual delegated responsibilities for forest protection without land-use certification; and Community Forest Allocation (CFA), where communities are granted long-term forest tenure and management rights supported by legal boundary records and internal regulations. In addition, some communities engage in forest management through initiatives supported by Payment for Forest Environmental Services (PFES) policies and the pilot Emission Reduction Purchase Agreement (ERPA) in the North Central Region, implemented under results-based carbon finance mechanisms that provide periodic, performance-based payments linked to verified emission reductions. Across these arrangements, forest governance practices draw on both customary norms and contemporary legal frameworks.

Marked differences in ecological conditions, livelihood structures and resource governance models make

these two regions suitable for a comparative analysis of OECM readiness and potential.

In response to the growing concerns over biodiversity loss, the Government of Vietnam has adopted a range of policies aimed at strengthening the conservation and restoration of natural ecosystems. Central to these efforts is the National Biodiversity Strategy to 2030, with a vision to 2050, approved under Decision No. 149/QĐ-TTg.

At the international level, Vietnam is a party to several conservation-related conventions and initiatives, including the Convention on Biological Diversity (CBD), CITES, Ramsar and REDD+. As a Party to the CBD, Vietnam is committed to contributing to the implementation of global biodiversity conservation targets, including the Kunming–Montreal Global Biodiversity Framework (GBF) and the goal of conserving 30% of terrestrial and marine areas by 2030 (30x30). In this context, guidelines for the implementation of other effective area-based conservation measures (OECMs) are currently being discussed and developed by the government and international organizations, to gradually integrate OECMs into existing management mechanisms.

2.2. Research Design

A qualitative research design was adopted to explore in depth the interrelated dimensions of resource governance, management practices, community perceptions and socio-institutional factors shaping OECM readiness. A qualitative approach is particularly well aligned with OECM research, given the emphasis of OECM criteria on governance mechanisms, continuity of management and demonstrable conservation outcomes within specific community contexts [3,13].

Purposive sampling was used to target key knowledge holders, individuals directly involved in resource management, exploitation or monitoring. This sampling strategy enabled focused and in-depth data collection on dimensions relevant to OECM criteria while capturing diverse experiences and viewpoints across stakeholder groups.

Two main participant categories were selected for the study:

(i) Local community members who directly manage, utilize or depend on forest and lagoon resources;

(ii) State management officials and community-based institutions involved in coordinating, supporting or enforcing resource governance at the local level.

2.3. Data Collection

This study involved qualitative interviews and focus group discussions (**Appendix A**) with adult participants. Formal approval from a human research ethics committee was not required under institutional or national regulations at the time of the study. Participation was voluntary, and informed consent was obtained from all participants prior to data collection. All data were treated confidentially and anonymized during analysis and reporting.

2.3.1. Secondary Sources

Secondary data were reviewed from international conservation policies (CBD, IPBES), national legal frameworks (Law on Forestry, Law on Biodiversity, and relevant decrees on fisheries management and conservation), as well as provincial plans and management reports on forestry, lagoon governance and biodiversity conservation in Huế City and Quảng Trị Province. This review established the governance and regulatory context relevant to OECM recognition and implementation and triangulated findings from focus group discussions and key informant interviews.

2.3.2. Focus Group Discussions (FGDs)

A total of 16 FGDs were conducted across the two study regions. Six FGDs were held in the coastal lagoon area of Huế City, representing local fishery chapters involved in resource protection and co-management arrangements. Ten FGDs were conducted in upland areas (five in Huế City and five in Quảng Trị Province), involving community groups responsible for the management and protection of community forests.

Each FGD involved 5–7 participants and was held at village cultural houses or private homes. Discussions followed a semi-structured guide focusing on biodiversity perceptions, the extent of community participation, coordination mechanisms with state agencies and expectations and needs associated with potential OECM application (**Table 1**).

Table 1. Overview of Qualitative Data Collection.

Data Type	Study Area	Location/Group Type	No. of Sessions	Number of Participants
FGD	Coastal lagoon (Huế City)	Local fisheries chapters	6	40
FGD	Upland (Huế City)	Community forest management groups	5	32
FGD	Upland (Quảng Trị Province)	Community forest management groups	5	33
KII	Huế & Quảng Trị	Government agencies, associations, reserve boards	15	15

2.3.3. Key Informant Interviews (KIIs)

In addition to FGDs, 15 key informant interviews were conducted with representatives of relevant agencies and organizations, including the Fisheries Sub-Department, nature reserve management boards, the Forest Protection and Development Fund, commune-level People's Committees, and the Fisheries Association. Interviews focused on institutional settings, governance regulations, the effectiveness of existing management models and assessments of OECM suitability within local contexts.

2.4. OECM Analytical Framework

The study draws on the definition of an Other Effective Area-based Conservation Measure (OECM) adopted under the Convention on Biological Diversity (CBD) Decision 14/8 (2018) and elaborated in the IUCN-WCPA [13]. Rather than applying the formal CBD identification criteria (Criteria A–D) directly, the OECM definition and guidance were used to inform four analytical dimensions for qualitative analysis:

(i) Governance—decision-making arrangements and institutional authority;

(ii) Management effectiveness—current practices that support sustained conservation outcomes;

(iii) Biodiversity contribution—demonstrable contributions to maintaining or enhancing biodiversity;

(iv) Long-term sustainability—institutional, social and resource conditions that enable durable conservation benefits.

These dimensions reflect core elements of the OECM concept and provide an interpretative framework for assessing community-level readiness, rather than a formal OECM site assessment. They were used to guide the coding, analysis and cross-case comparison of data across the two contrasting social-ecological systems, allowing for an assessment of community-level readiness and potential for OECM recognition (**Figure 2**).

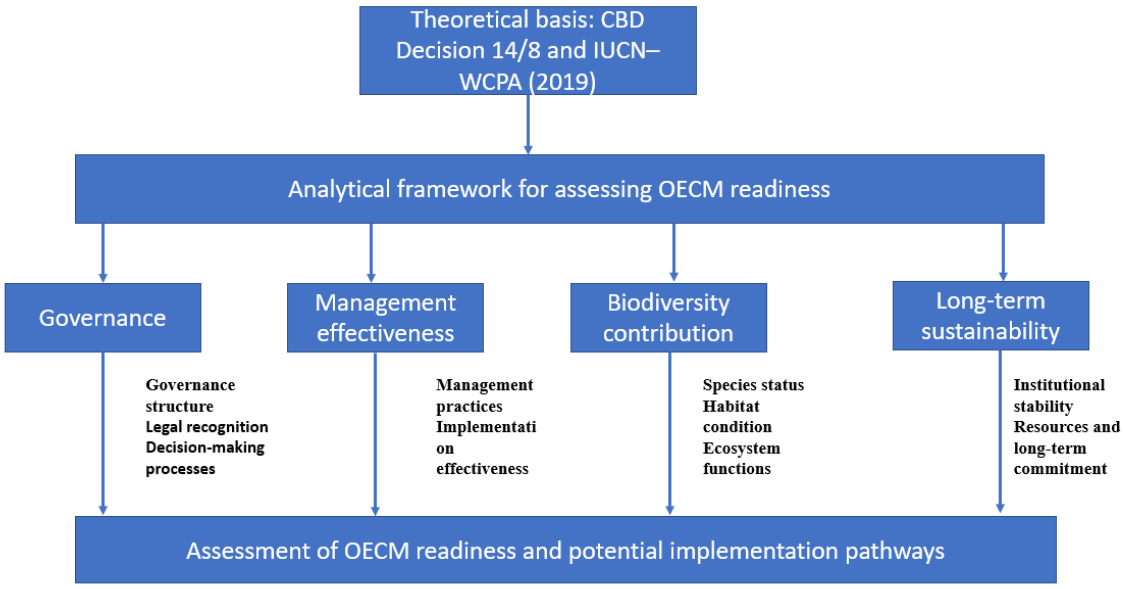

Figure 2. Analytical Framework for Assessing Community Readiness for OECM Implementation, Informed by the OECM Definition and Guidance under CBD Decision 14/8 (2018) and IUCN–WCPA (2019) [13].

2.5. Data Analysis

Qualitative data were coded and analysed using computer-assisted qualitative data analysis software (CAQDAS), NVivo 12 (QSR International, Melbourne, Australia) [14], which facilitated hierarchical coding, systematic retrieval and cross-case comparison. A combined analytical approach was employed.

First, directed content analysis served as the primary analytical framework, drawing on the methodological foundations of Hsieh and Shannon [15] and updated applications in Selvi [16]. Following this approach, an initial deductive coding framework was developed based on four analytical dimensions: governance, management effectiveness, biodiversity contribution, and long-term sustainability. All transcripts were read in full to ensure familiarity with the data prior to coding. During the coding process, in addition to the main codes derived from the analytical framework, sub-codes were refined and expanded inductively where empirical evidence did not align with the predefined categories. Coding outputs were subsequently reviewed and discussed within the research team to ensure internal consistency and analytical coherence across cases.

Second, thematic analysis was used as a complementary approach to explore deeper layers of meaning embedded in participants' narratives, particularly in relation to dimensions not fully captured by the formal OECM framework. Themes were developed inductively and included: perceptions of forests and lagoons; trust in governance institutions; concerns regarding resource access; motivations for OECM participation; and the role of cultural–social values in conservation [17,18].

Combining these two analytical approaches strengthened the overall rigour of the study and ensured that assessments of OECM readiness remained grounded in international standards while also capturing the distinct social-ecological contexts of each community (**Table 2**).

Table 2. Coding Framework for Qualitative Analysis.

OECM Criterion	Analytical Indicators (Codes)	Data Sources
Governance	Legal recognition; decision-making processes; institutional continuity	FGDs; KIIs; policy documents
Management effectiveness	Patrol activities; rule enforcement; monitoring practices	FGDs; KIIs
Biodiversity contribution	Species trends; habitat condition; ecosystem functions	FGDs; KIIs; reports
Long-term sustainability	Financial mechanisms; institutional stability; community commitment	FGDs; KIIs; PFES/ERPA records

3. Results

3.1. Governance

In coastal lagoon communities, information from six focus group discussions indicates that fishing households are organized into local fishery chapters, most of which were established in the early 2010s through formal decisions of local authorities. These organizations were formed with the primary aim of supporting fisheries resource protection and regulating the use of lagoon waters for capture fisheries and aquaculture, as reported in communities such as Hà Công, Tân Lập and Lăng Cô.

Each fishery chapter is led by an executive committee of four to seven members, supported by additional working groups depending on membership size (typically ranging from 40 to 80 members). Membership primarily comprises households engaged in fishing and aquaculture. Fishing activities are predominantly small-scale, combining subsistence use with market-oriented production. Most households rely on lagoon fisheries and aquaculture as a primary livelihood source, selling a substantial portion of their catch while retaining part for household consumption. Internal regulations specify permissible fishing gears, mesh sizes, spatial zones and seasonal restrictions. According to participants, membership was initially widespread among lagoon-based households, reflecting relatively broad community participation at the outset.

Most participants across coastal lagoon communities consistently described governance mechanisms as functioning most effectively during the initial years following establishment, when fishery chapters worked in close coordination with local authorities, the police and border guard forces. However, participants in all coastal communities described a marked decline in governance effectiveness

following the completion of externally funded projects, primarily supported by NGO programmes, that had supported co-management and fisheries protection initiatives.

Beyond financial challenges, several chapters reported issues related to leadership continuity. Executive committees in many sites are composed primarily of elderly members; meetings are not held regularly, and coordination capacity is perceived as limited, as noted in Ngư Mỹ Thạnh, Lăng Cô, Hà Công and Tân Lập. Some chapters also reported that community regulations and fisheries bylaws—particularly those related to leadership roles and permitted fishing gear—have not been updated or consistently enforced, resulting in persistent institutional gaps in local governance.

Evidence from ten FGDs in upland communities in Huế City and Quảng Trị Province indicates a different pattern. Most villages possess formal Community Forest Allocation (CFA) decisions accompanied by boundary records, maps and internal regulations approved by the village, providing a clear legal basis for community forest governance. However, some sites—including Hương Phú, Ka Cú 2, A Liêng and Chênh Vênh—reported that forest management plans had not yet been fully developed.

Organizational structures within upland communities were described as well-established and consistently active, associated with multiple forms of delegated forest management. Many villages hold long-term community forest rights granted by the State, with boundary documentation, maps and community-approved management regulations. Other communities participate in forest management through annual forest protection contracts (FPCs), whereby communities are responsible for protecting forest areas without formal land-use certificates.

Building on these delegated rights, villages typically establish community forest management boards, supervisory committees and patrol groups. Roles and responsibilities are clearly delineated within internal regulations. FGDs also highlight relatively diverse community representation within these governance structures, including women serving as secretaries or treasurers in some villages and youth participation in patrol activities, as observed in Trăng Tà Puồng and Ba Ngày.

3.2. Management Effectiveness

In the coastal lagoon area of Huế City, data from six FGDs indicate that during the early phase of co-management implementation, fisheries protection activities were maintained relatively regularly. Participants reported localized improvements in fisheries resources during periods when patrols were conducted continuously, small-mesh traps were removed and the use of electric fishing devices was controlled. These improvements were associated with the reappearance of certain species groups such as shrimp, crabs and Siganidae (rabbitfish).

However, all FGDs conducted in the coastal zone described a marked decline in management effectiveness in recent years. Following the completion of externally funded co-management initiatives, most self-management groups either ceased activities or substantially reduced their engagement. Patrols became irregular and largely ad hoc, often taking place only when conflicts arose among resource users. Some fishery chapters reported that patrols were carried out only when members voluntarily contributed to fuel costs.

Record-keeping practices used for monitoring, such as patrol logs and violation reports, are no longer maintained in many coastal communities. Participants described a shift from scheduled patrols to "as-needed" responses, indicating that management activities have become less continuous and systematic compared to the initial phase of implementation.

A different pattern is observed in upland communities in Huế City and Quảng Trị Province, where community forest management activities are maintained on a regular and organized basis. Communities including Hương Phú, Ka Cú 2 and Thôn Ta (Huế), and A Liêng, Trăng Tà Puồng, Hướng Lập, Chênh Vênh, Cuội and Ba Ngày (Quảng Trị) reported developing management plans and conducting monthly forest patrols. According to participants, the frequency of these activities remains largely uninterrupted, even during periods without external project support.

Management effectiveness in upland communities was reflected in observable changes noted by participants, including reductions in illegal timber extraction and the reappearance of wildlife signs such as douc langurs, muntjac deer, porcupines, squirrels and wild boar. Several groups also reported improvements in forest structure, including canopy regeneration in community-managed areas. Local communities primarily collect non-timber products from

forests, such as bamboo, rattan, mushrooms, honey, and medicinal plants, rather than timber extraction.

Collected data highlight clear contrasts between the two social-ecological systems in the continuity of resource management activities. In upland communities, forest management, including patrolling, field monitoring through routine forest walks, boundary checks, and reporting of forest condition and violations**,** and enforcement of community management regulations, is maintained according to regular schedules and established plans. FGDs indicated that these activities typically follow monthly patrol calendars, with designated patrol zones and written patrol logs.

This pattern differs in coastal lagoon communities, where fisheries management activities have become increasingly discontinuous following the cessation of project-based support. Patrols, compliance monitoring and record-keeping are no longer conducted regularly and instead occur spontaneously or primarily in response to conflicts among resource users.

3.3. Biodiversity Contribution

A marked decline in biodiversity compared with conditions 10–20 years ago was consistently described in coastal lagoon communities during six FGDs. Communities in Giang Xuân, Thanh Mỹ, Hà Công, Ngư Mỹ Thạnh and Lăng Cô described substantial reductions or the disappearance of species that were previously common, including *Gerres filamentosus*, *Eleutheronema tetradactylum*, *Leiognathus* spp., *Oratosquilla oratoria*, and *Anguilla* spp. In FGDs held in Hà Công and Ngư Mỹ Thạnh, several taxa such as *Gerres filamentosus*, *Leiognathus* spp. and *Anguilla* spp. were described as "rarely seen anymore," reflecting significant degradation of aquatic communities within the lagoon ecosystem.

Alongside species declines, widespread habitat changes were also reported. Participants noted dense proliferation of algae and aquatic vegetation in multiple locations, altering habitat conditions and the spatial distribution of aquatic species groups. FGDs in Ngư Mỹ Thạnh reported increasing occurrences of freshwater fish species within lagoon areas, which participants associated with reduced salinity compared to previous decades, indicating substantial changes in the hydrological characteristics of the ecosystem.

Although several communities observed localized biodiversity recovery during the initial phase of co-management implementation, these signals were not sustained in subsequent years. Overall, according to participant accounts, current biodiversity contributions from the coastal lagoons are comparatively low relative to historical conditions.

In contrast, in upland communities, the information from FGDs indicates relatively stable biodiversity conditions with signs of recovery in many locations. Communities in Hương Phú, Ka Cú 2, A Lưới 1 and Thôn 3 (Huế), as well as A Liêng, Trăng Tà Puồng, Chênh Vênh, Cuội and Ba Ngày (Quảng Trị), reported the presence or traces of several important forest animal species such as douc langurs *(Pygathrix spp.),* stump-tailed macaques *(Macaca arctoides),* large-antlered muntjac *(Muntiacus vuquangensis),* sambar deer *(Rusa unicolor),* porcupines *(Hystrix brachyura),* wild boar *(Sus scrofa)* and various native forest bird species.

Forest habitats in these areas were described as maintaining high canopy cover, multi-layered structure and limited fragmentation. Many community forests are adjacent to, or function as ecological connectors between, existing protected areas, including Bạch Mã National Park, Phong Điền Nature Reserve, Bắc Hải Vân Landscape Protection Area and Special-Use Forests Managed under the Nam Quảng Trị Special-Use Forest Management Board. FGDs suggest that this degree of landscape connectivity contributes to maintaining continuous habitat for forest wildlife.

The contrast in biodiversity conditions across the two social-ecological systems is evident in participant narratives. While upland communities have maintained relatively stable forest habitats with lower levels of disturbance, coastal lagoon ecosystems were described as facing simultaneous pressures, species decline, habitat alteration and hydrological change, constraining natural recovery potential and limiting current biodiversity contributions.

3.4. Long-Term Sustainability

FGD data, in the coastal lagoon region, indicate that resource management systems face substantial challenges in sustaining activities over time. Participants described strong dependence of co-management initiatives on short-

term project support. Once these projects ended, many management activities, including patrolling and monitoring, declined rapidly or ceased altogether.

Although some fishery chapters in Thanh Mỹ and Giang Xuân attempted to sustain operating costs through member contributions, FGDs suggest that these contributions were insufficient to maintain regular activities amid declining fisheries resources. Participants noted that reduced economic benefits from harvesting and water-based resource use constrained the ability of members to contribute financially to chapter operations.

FGDs also highlighted that financial constraints coincide with increasingly evident environmental changes within the coastal lagoon system. Participants described shifts in hydrological conditions toward lower salinity, accompanied by changes in reproductive cycles and increased presence of freshwater fish species in certain areas, signals of substantial transformation in lagoon dynamics. In Lăng Cô, the expansion of oyster aquaculture was reported to increase organic waste loads, narrow water channels and heighten conflicts between aquaculture and capture fisheries. FGDs also reported the reappearance of prohibited fishing gears, including electrofishing and dragnet traps, amid weakened enforcement mechanisms.

By comparison, evidence from upland communities suggests a higher degree of long-term continuity in community forest management systems. Participants described relatively stable financial flows from PFES and ERPA in the North Central Region. These revenue streams fund patrolling, habitat restoration and livelihood support, contributing to sustained management activities.

Beyond financial factors, FGDs in upland areas pointed to generational continuity in community institutions. Many villages reported active participation of younger members in patrol groups or in administrative roles such as secretary and treasurer, helping maintain management over time. Several communities, including Trăng Tà Puồng, Chênh Vênh and Ba Ngày (Quảng Trị), as well as Hương Phú and Thôn 3 (Huế), also described integrating cultural and spiritual values into forest protection practices, reinforcing community cohesion and sustained engagement.

Comparison across the two social-ecological systems highlights pronounced differences in the long-term continuity of resource management systems. While upland communities have largely maintained management activities even without direct project support, coastal lagoon communities show markedly higher levels of discontinuity once external resources are withdrawn.

FGDs also indicate that long-term sustainability is not guaranteed in upland settings. Participants noted that the eventual conclusion of programs such as ERPA could substantially reduce community revenues, requiring communities to diversify livelihood strategies and mobilize additional resources to sustain management in the future.

3.5. Overall Assessment of OECM Potential against the Four Core Criteria

Drawing on the four OECM assessment criteria established under CBD Decision 14/8 (2018) and operationalized in the IUCN–WCPA guidelines (2019), synthesis of data from 16 FGDs across the two social-ecological systems reveals pronounced differences in the degree to which OECM criteria are currently met in coastal lagoon and upland communities.

Table 3 presents a summary of community-level alignment with OECM criteria, based on evidence from FGDs, key informant interviews and cross-case comparison. According to the qualitative data, upland communities exhibit stronger alignment with criteria related to governance, management effectiveness, biodiversity contribution and long-term sustainability. In contrast, coastal lagoon communities demonstrate weaker and less stable alignment across most criteria, particularly those associated with continuity of management and sustained resourcing.

These synthesized patterns reflect broad regional tendencies. However, the qualitative data also indicate substantial variation among communities within the same social-ecological system. Some communities show higher alignment with OECM criteria than regional averages, whereas others face pronounced institutional, ecological or resource-related constraints. Consequently, assessments of OECM readiness should be undertaken at the level of specific management units rather than inferred uniformly for entire regions.

Results from key informant interviews (KIIs) were used to complement and clarify the context of findings from focus group discussions, particularly with regard to

regulations on community forest allocation for management and protection, as well as policy directions related to the establishment and operation of fisheries associations. In addition, KIIs helped to elucidate operational mechanisms and benefit-sharing arrangements associated with financial instruments such as PFES and ERPA, as well as management programmes and activities in coastal areas. These insights were cross-checked and synthesised with community-level evidence from focus group discussions to inform the qualitative assessments presented in **Table 2**.

Table 3. Alignment with OECM Criteria across Two Social-Ecological Systems (Qualitative Synthesis).

OECM Criterion (CBD Decision 14/8)	Coastal Lagoon Communities (6 FGDs)	Upland Communities (10 FGDs)	Synthesis
1. Governance	Moderate–weak	Strong	Upland communities maintain clearer governance structures; coastal governance weakened after project-based support ended.
2. Management effectiveness	Weak–intermittent	Stable–regular	Upland communities sustain regular patrols; coastal communities show discontinuity and renewed use of destructive gears.
3. Biodiversity contribution	Strong decline	Moderate–high	Coastal systems show reduced stocks and habitat change; upland forests retain key species and habitats with evidence of species return.
4. Long-term sustainability	Low	Moderate–high	Upland communities benefit from PFES/ERPA revenue and intergenerational institutional continuity; coastal communities lack sustained resources after project withdrawal.

3.6. Within-Region Variation

Although the two social-ecological systems show clear differences when compared across the four OECM criteria groups, FGD data reveal substantial heterogeneity among communities within each system. These differences reflect variation in community structure, organizational capacity, ecological pressures and socio-economic conditions across sites, which in turn shape how OECM criteria manifest at the scale of specific management units.

In the coastal lagoon region, the degree to which management activities and regulatory compliance are sustained varies markedly among local fishery chapters. Some communities, such as Ngư Mỹ Thạnh and Giang Xuân, were described as maintaining relatively frequent patrols during the early phases of co-management implementation, whereas others, such as Lăng Cô, Hà Công and Thanh Mỹ, experienced earlier and more pronounced declines in organizational capacity and activity continuity. FGDs also indicate that ecological pressures vary across locations: areas closer to the estuary face more intensive exploitation, while sites located deeper within the lagoon are more strongly affected by changes in hydrological conditions and benthic habitats.

In upland communities, similarly substantial differences were observed among villages in the continuity of community forest management. Villages such as Hương Phú, Ka Cú 2, Trăng Tà Puồng, Chênh Vênh and Ba Ngày were described as maintaining higher patrol frequency, systematic record-keeping and relatively close coordination with local forest rangers. In contrast, communities such as A Liêng and Húc Nghì reported minimal patrol activity, with constraints linked to extensive forest areas, adjacency to production forest zones and less diverse ecological conditions.

Beyond organizational and ecological factors, variation in customary norms and cultural practices across ethnic groups, including the Katu, Pa Cô, Tà Ôi and Vân Kiều, also contributes to differences in community forest governance. Some villages maintain traditional regulations associated with sacred forests, whereas others rely primarily on contemporary administrative regulations.

These findings demonstrate that OECM criteria do not manifest uniformly within a given social-ecological system but vary considerably across specific management units. Consequently, community-level OECM assessment must account for within-region variation rather than relying on regional averages or generalized ecological characteristics.

3.7. Community Perceptions of OECMs and Conditions for Consent

Focus group discussions conducted in both coastal lagoon and upland forest communities indicate that awareness of the concept of other effective area-based conser-

vation measures (OECMs) remains very limited. Most participants considered OECMs to be a new concept and reported that they had not previously been introduced or discussed in local resource management programmes.

When OECMs were explained, participants in coastal lagoon communities expressed a predominantly cautious and concerned response rather than clear support. Underlying this caution were concerns about the potential imposition of additional restrictions on fishing activities, access to lagoon space, and increased enforcement burdens. Given that fisheries resources play a critical role in local livelihoods, these perceived risks were considered significant. Participants also emphasized the strong environmental variability of lagoon ecosystems, including changes in water quality, rapid landscape transformations, and ecosystem dynamics, which they viewed as posing challenges to the feasibility of OECM implementation.

Participants in upland forest communities reported long-standing experience in forest management and protection, including rules prohibiting the hunting of endangered wildlife and the overexploitation of certain valuable species. When further informed about OECMs, community members tended to view OECMs as a potential opportunity rather than a direct threat to livelihoods. This perception was partly shaped by the tangible benefits derived from existing forest management arrangements. Participants noted the recovery of certain wildlife species and the development of non-timber forest products, and highlighted that through benefit-sharing mechanisms, communities could derive livelihood benefits from enhanced biodiversity, thereby reinforcing more positive attitudes toward conservation-based governance.

Across both social–ecological systems, participants emphasized that any future consideration of OECM recognition would depend on the provision of clear information, meaningful participation, and the consent of both directly involved and neighbouring communities, as well as safeguards to avoid negative impacts on local livelihoods. Coastal lagoon communities stressed the need for strengthened enforcement support and the formalization of community rules, while upland forest communities emphasized the importance of technical guidance, biodiversity training, and equipment support for protection and biodiversity monitoring. These findings suggest that while there is interest in OECMs, community acceptance remains conditional and closely linked to governance capacity, livelihood considerations, and benefit-sharing mechanisms.

4. Discussion

4.1. Differences in OECM Readiness across Social-Ecological Systems

This study demonstrates marked differences in OECM readiness between coastal lagoon and upland forest communities in central Vietnam. Across the four core OECM criteria outlined in CBD Decision 14/8, governance, management effectiveness, biodiversity contribution and long-term sustainability, upland forest communities showed higher overall readiness than coastal lagoon communities. These findings align with international evidence indicating that conservation effectiveness is strongly shaped by operational capacity, institutional continuity and levels of extractive pressure [19,20], and that ecosystems subject to lower exploitation tend to maintain ecological functions more effectively over time [21]. They are also consistent with OECM guidance, which specifies that institutional stability and the ability to sustain active management are necessary conditions for long-term conservation outcomes [13].

In upland forest areas, several features of current forest governance arrangements correspond with OECM expectations related to governance, continuity of management and biodiversity contributions. Local communities participate in forest governance through Forest Protection Contracting and Community Forest Allocation, with most communities maintaining regular patrols, monitoring and management practices over extended periods, factors that have been widely documented as enabling effective community-based forest management in Vietnam [22]. As a result, partial alignment with multiple OECM criteria can be observed, although the degree of alignment varies among communities according to resource availability, local context and levels of participation.

In contrast, coastal lagoon communities demonstrate lower and less stable OECM readiness. While co-management arrangements initially generated localized improvements, these outcomes proved difficult to sustain once project-based support ended, a pattern well documented in

community-based coastal resource management globally [23,24]. Dependence on short-term external support, combined with declining fisheries productivity and increasing environmental variability, constrained the continuity of management practices and reduced alignment with OECM criteria relating to long-term sustainability.

4.2. Continuity of Governance and the Durability of Management

Comparative findings highlight that continuity in governance is a decisive factor in transforming community-based management arrangements into durable OECM outcomes. Research on common-pool resource governance has long demonstrated that effectiveness is shaped not only by the design of institutional arrangements but also by the ability to sustain rules, roles and coordination mechanisms over time [25,26].

In upland forest communities, community forest rights are institutionalized through long-term Community Forest Allocation arrangements, typically issued for 50-year periods, or through Forest Protection Contracting schemes that are periodically renewed. In addition, regular coordination between communities and state management agencies supports adaptive governance and enables sustained management practices. These characteristics are consistent with analyses of adaptive governance, which show that community-based conservation outcomes depend strongly on the capacity of local institutions to maintain active management, engage in social learning and adjust practices to changing contexts [27,28].

In contrast, coastal lagoon communities exhibit weaker governance continuity due to strong dependence on short-term project interventions. While upland communities benefit from relatively stable financial mechanisms such as PFES and the emerging potential of carbon market instruments, coastal communities generally lack equivalent mechanisms to sustain active management once external projects end. When financial and technical support is withdrawn, management activities decline rapidly, reflecting well-documented limitations in co-management systems in high-pressure coastal contexts [19,23,29].

Differences in governance continuity between the two systems become even more pronounced when considered alongside the ecological resilience of each system, which is shaped by contrasting levels of extractive pressure and environmental variability.

4.3. Biodiversity Outcomes and the Limits of Community-Based Management in Lagoon Systems

Differences in biodiversity outcomes between the two social-ecological systems underscore the ecological constraints shaping OECM implementation. In upland forest contexts, CFA are typically associated with practices such as forest protection, natural regeneration, enrichment planting and habitat restoration [30,31], reinforced by customary institutions and long-standing resource-use norms [32]. These characteristics help maintain forest structure and key ecological functions, thereby contributing to conditions that support biodiversity.

In contrast, coastal lagoon ecosystems are highly dynamic and particularly sensitive to environmental change. Biodiversity decline in these systems is driven not only by overexploitation but also by the intrinsic sensitivity of lagoon environments to shifts in hydrology, nutrient regimes and spatial uses. Lagoon–estuarine systems function as transitional zones between freshwater and marine environments and are characterized by high variability in hydrological and salinity conditions, to which biological communities respond strongly [33]. This context implies that even relatively small fluctuations in hydrological regimes or resource extraction can rapidly alter ecological structure with long-lasting and difficult-to-reverse consequences [34,35].

Taken together, these findings suggest that while co-management arrangements are necessary, they may be insufficient to generate sustained conservation contributions in lagoon systems unless complemented by interventions at the watershed scale and by cross-sectoral management mechanisms. This trend is consistent with analyses demonstrating the limits of co-management under strong ecological pressures and increasing environmental variability [20].

4.4. Implications for OECM Implementation

The findings of this study contribute directly to ongoing debates on how to operationalize OECM to advance

Global Biodiversity Framework Target 3. Recent analyses argue that expanding effective conservation cannot rely solely on enlarging protected areas, but must recognise and support diverse governance arrangements that deliver sustained conservation outcomes beyond formal protected areas [36]. Building on this perspective, our comparative results provide strategic implications for how OECM can be identified, supported and sequenced in Vietnam.

4.4.1. Strategic Implications

First, upland community forests with stable governance foundations and observable conservation outcomes emerge as priority candidates for OECM recognition. These areas exhibit institutional continuity, community engagement, and biodiversity contributions consistent with key components of OECM guidance [3], although levels of readiness vary between sites.

Second, coastal lagoon communities require more flexible and staged pathways. Ecological sensitivity, uneven enforcement, and dependency on short-term programmes constrain continuity of management, limiting their readiness for OECM recognition at present. A "pathway-based" and "context-specific" approach, rather than uniform criteria, aligns with recent recommendations for recognising OECM across diverse socio-ecological settings [37,38].

Third, conservation effectiveness is intertwined with governance quality, social equity and ecological conditions. These dimensions jointly shape readiness and long-term continuity, reinforcing arguments that OECM implementation must engage with community-level institutional dynamics.

These findings also highlight that free, prior and informed consent for OECM designation cannot be assumed, but must be built through context-specific engagement that addresses community perceptions, livelihood concerns and existing governance capacity.

4.4.2. Policy Pathways for Vietnam

To translate these strategic implications into practice, we outline policy pathways tailored to specific socio-ecological contexts:

Coastal lagoons: restoring co-management structures; establishing long-term financing (e.g., blue carbon, habitat fees); strengthening multi-sector coordination at lagoon–watershed scale; improving biodiversity monitoring and participatory enforcement.

Upland community forests: prioritising sites with continuous management, demonstrated conservation outcomes, and adjacency to existing protected or conserved areas for early OECM nomination; ensuring medium-term financing through PFES and emerging carbon mechanisms.

Landscape connectivity: integrating community forests into provincial planning as ecological corridors linking existing protected areas.

Inclusive governance: strengthening participation of women and youth to enhance continuity of governance and intergenerational stewardship.

4.5. Limitations and Directions for Future Research

The study also recognises several limitations. Biodiversity data were largely derived from community perceptions and short-term field observations; future research would benefit from integrating long-term and quantitative ecological monitoring to strengthen the evidence base. Moreover, the absence of a standardised community-level readiness framework remains a challenge for comparative assessment and prioritisation of OECM development in Vietnam.

5. Conclusions

This study provides empirical comparative evidence on the readiness for implementing Other Effective Area-Based Conservation Measures (OECMs) across two contrasting social-ecological systems in central Vietnam: coastal lagoon communities and upland forest communities in Huế and Quảng Trị. Using the four core OECM criteria established under the Convention on Biological Diversity and operationalized in IUCN–WCPA guidance, the findings reveal marked differences in governance capacity, management continuity, biodiversity contributions and long-term sustainability between the two systems. In particular, upland forest communities demonstrate higher OECM readiness due to clearly defined management rights, continuous management practices and relatively stable financial mechanisms. In contrast, coastal lagoon communities face greater challenges related to ecological

variability and dependence on short-term project support.

By clarifying how social-ecological context, governance continuity and ecological conditions jointly shape readiness for sustained conservation outside formal protected areas, the study provides an empirical foundation for developing context-specific and sequenced OECM pathways, supporting national efforts to expand effective conservation coverage in line with the Kunming–Montreal Global Biodiversity Framework and its 2030 targets.

Author Contributions

Conceptualization, H.Q.T. and H.T.N.; methodology, H.Q.T. and H.T.N.; software, H.Q.T.; validation, H.Q.T. and H.T.N.; formal analysis, H.Q.T.; investigation, H.Q.T.; resources, H.T.N.; data curation, H.Q.T.; writing—original draft preparation, H.Q.T.; writing—review and editing, H.Q.T. and H.T.N.; visualization, H.Q.T.; supervision, H.T.N.; project administration, H.T.N. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

Ethical review and approval were waived for this study due to the non-invasive nature of the research. The study involved voluntary participation, no collection of sensitive personal data, and no procedures requiring formal ethical clearance under applicable institutional or national regulations.

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request. The data are not publicly available due to privacy and ethical considerations.

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Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

AI Use Statement

An AI-based language support tool ChatGPT (OpenAI) was used in a limited manner for basic grammar and typographical corrections only. All substantive content, analysis, and interpretation are the authors' own. The authors subsequently reviewed and edited the content as necessary and take full responsibility for the final content of the published article.

Appendix A. Focus Group Discussion Guiding Questions

Focus group discussions were conducted using a semi-structured guide covering the following themes and indicative questions.

1. Community Perceptions and Participation

What do community members understand about biodiversity and the role of communities in conservation?

How has the community participated in conservation

activities (e.g., planning, implementation, monitoring, benefit-sharing)?

What are the main strengths and weaknesses of community participation in conservation? What challenges and opportunities exist?

Are there any good practices or lessons learned from community-based conservation initiatives?

How are vulnerable groups (e.g., women, ethnic minorities, people with disabilities) involved in conservation activities?

2. Stakeholder Engagement and Governance

How does the community collaborate with local authorities, forest owners, and social organisations in resource management?

What roles and responsibilities do different stakeholders play, and what challenges affect coordination and enforcement?

How effective is the current collaboration between the community and other stakeholders?

3. Livelihoods and Financial Mechanisms

What livelihood activities are linked to conservation (e.g., non-timber forest products, PFES, ecotourism)?

How do benefit-sharing mechanisms operate, and how sustainable are these livelihood models?

What lessons have been learned from past or ongoing livelihood initiatives?

How do communities access financial support mechanisms, and what improvements are needed?

4. Awareness and Perceptions of OECMs

Had community members heard of Other Effective Area-based Conservation Measures (OECMs) prior to this discussion?

After the explanation, how do community members perceive the potential benefits and risks of OECM recognition?

What conditions would be necessary for communities to consider OECM recognition?

5. Barriers, Opportunities, and Recommendations

What are the main barriers to effective community participation and conservation?

What opportunities could support improved governance and conservation outcomes?

What actions could help strengthen community-based conservation in the future?

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