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Development of Marine Protected Areas (MPAs) in Vietnam from a coevolutionary governance perspective: Challenges of unholy alliances between the state, businesses and NGOs

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ABSTRACT

Marine Protected Areas (MPAs) are widely recognised as a management framework for achieving biodiversity conservation and sustainable ocean uses. Although the attention to improving the governance of MPAs as a priority for achieving effective MPAs has been escalated, debates concerning MPA governance are inspired mainly by the bottom-up governance approach and its focus on horizontal and vertical linkages as a means of resolving conflicts, with the assumption that the state should only take a passive role. As the debates on the best MPA governance model continue, the progress of spatially expanding the global MPA network remains slow and has created many paper parks. Through a coevolutionary governance lens, this paper aims to empirically examine the development of MPAs in Vietnam and reflect on the national realities of achieving global biodiversity targets. Our findings emphasise that governance frameworks adopted for Vietnamese MPAs are typically characterised by a significant decentralisation of responsibilities to province-/district-level governments but with a lack of conditions and accountability attached to such responsibilities and of related oversight from the central government. Consequences include rent-seeking and clientelism opportunities for local authorities, elite capture of MPA benefits, and diminishing trust and stewardship among local communities. Our study suggests that, in the face of increasing overfishing and corporate interests nurtured by the unholy alliances between the state, businesses and NGOs, effective and equitable MPAs critically rely on synergies among different governance approaches, which are case-specific, along with sufficient political will and oversight from the state.

1. Introduction

With about 66% of the marine environment considerably altered by human activities (Díaz et al., 2019), Marine Protected Areas (MPAs) are increasingly recognised as a potentially effective policy solution to the stressing problems of overfishing and marine biodiversity loss (McCay and Jones, 2011; Jones, 2014; Rees et al., 2020). The Convention on Biological Diversity (CBD) set a global target for nation-states to conserve at least 10% of their coastal and marine areas by 2020, through 'equitably managed, ecologically representative, and well-connected systems of protected areas' (the CBD Aichi target 11) (CBD, 2010). This target was incorporated into Goal 14 of the 17 Sustainable Development Goals (SDGs) by the United Nations in 2015 (United Nations, 2015). Despite efforts to expand the percentage coverage of MPAs globally (UNEP-WCMC, 2021), with growing support to increase the

MPA coverage target to 30% by 2030 (also known as the '30 ×30' target) (HAC for Nature and People, 2022), the effectiveness and equity of individual MPAs are inadequately assessed (Pendleton et al., 2017; Di Franco et al., 2020; Jones and Long, 2021), while the loss of marine biodiversity continues at alarming rates (CBD, 2020).

This paper examines how MPAs achieve their effectiveness and equity targets through an empirical analysis of the governance of MPAs in Vietnam using the MPA governance (MPAG) framework (Jones, 2014), which has been applied to over 50 MPA case studies in 24 countries (Jones et al., 2013; Jones and Long, 2021), providing actionable insights into the global progress towards biodiversity conservation and sustainability. Vietnam was selected as a case study because of its rich biodiversity (Myers et al., 2000; Spalding et al., 2007; NOAA, 2017), which is threatened by multiple ecosystem change drivers (Brooks et al., 2015), particularly rapid economic expansion. The economic reform (known as

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Table 1

Summary of key themes/elements of the MPAG framework (Jones, 2014; Jones and Long, 2021), relevant data collection methods and data sources used by this research.

No.	Analytical framework	Data collection methods		
	Themes/elements of the MPA Governance Framework	Document Analysis	In-depth interviews	Participant or non-participant observations
1	Context An indication of the economic and development status for the country and/or province where the MPA is situated. Context can be divided into: Biogeographical context/Socio-economic context Political context (including key metrics and indicators: per capita GDP and growth rate, human development index (HDI), etc.).	Socio-economic data can be collected from national statistics, World Bank, etc. Ecological data are often available in MPA management plans, national biodiversity monitoring data, etc.	Information on political and cultural context can derived from in-depth interviews and participant observations	
2	Objectives of the MPA Objectives are categorised in terms of conservation objectives (the 'ends' of conserving habitats, species, ecosystems, fish stocks, etc) and operational objectives or the 'means' of achieving former (including raising awareness, promoting participation, etc.).	Often listed in MPA management plan or other policy documents	Information can be gained through discussions with MPA managers and policymakers	Observation can help gather information from presentation and policy dialogues in related national conference.
3	Drivers/Conflicts Specific sectoral human activities leading to proximal (from nearby) impacts on MPA conservation objectives in No. 2, along with human factors underlying these impacts (poverty, migration, population growth and increasing demand for fish).	Often outlined in MPA management plan, policy documents, etc. or discussed in related literature.	Information can be drawn from interviews with policy makers, MPA managers, local fishers, dive instructors, MPA wardens, NGOs, etc.	Participation in MPA activities, NGOs' workshops, and observations of local resource use patterns can provide critical insights.
4	Governance framework/approach Indication of the main approach by which the MPA is governed. The governance framework is often based on how it was initiated. This is often outlined by the legal, policy and participative governance structure and assignation to one of four MPA governance approach categories: i) state-governed; ii) decentralised to local institutions with state oversight; iii) governed by local communities; iv) governed by private sector entities and/or NGOs.	Often outlined in MPA management plan, policy documents, etc. or discussed in related literature.	Interviews with policy makers, MPA managers, NGOs, etc. on how the MPA was initiated, main policies, etc. provide insights into governance from different perspectives.	More insights can be gained from participating into related MPA activities and formal and informal discussions with key stakeholders
5	Effectiveness in achieving conservation objectives Indication of the degree to which impacts have been reduced in order to reduce basic conflicts and achieve conservation objectives, on a scale of 0–5 (Section 3.4.).	MPA effectiveness is often assessed in periodic reports to MPA authority; where not, can be drawn from scientific papers & reports on impacts and related trends	If monitoring data is limited, trends in habitats, species and exploitation can be gathered from interviews with key actors.	Additional information on effectiveness can also be obtained from field notes recording observations during fieldwork.
6	Incentives Incentives are institutions/mechanisms designed to encourage the people involved in governing an MPA to behave in a manner that yields the success of strategic conservation objectives (Jones, 2014). Assessment on governance incentives aims to deconstruct the governance framework described in No. 4 into 36 incentives from five categories (legal, economic, communication, knowledge and participation) to identify which incentives are used and which are priorities for strengthening (refer to Section 2.1 and Box 1 for more detailed discussion on incentives). It is crucial to understand how different incentives support and reinforce each other in a coevolutionary way.	Description of interventions or mechanisms in place can be found from MPA management plan, relevant literature, policy documents, technical reports from NGOs and development agencies, etc.	Analyses on how different incentives are being used and which are priorities for strengthening can be derived from in-depth interviews with key stakeholders.	Further information on the process of using incentives can be gained through non-participant or participant observations undertaken at each MPA.
7	Cross-cutting issues Including role of leadership, role of non-governmental organisations (NGOs), social equity issues, etc.	Information on cross-cutting issues can be drawn on the analysis of incentives (No. 6) in combined with using different data sources from document analysis, in-depth interviews, and observations.		

the *Doi Moi* policy), launched in 1986, transformed Vietnam from an authoritarian regime to a socialist market-oriented state, resulting in remarkable economic growth and poverty reduction. However, under the tight supervision of the Vietnamese Communist Party (VCP), these gains have come with chronic socio-political challenges associated with the party-state system, particularly clientelism, rent-seeking, inadequate civil rights, etc. Thus, despite conservation efforts in the national protected area systems over the past four decades, Vietnam remains at a crossroads of numerous sustainability issues (deforestation, mass tourism development, land grabbing, etc.), which are often underrepresented in the literature (Khuu, 2018). Within this context, this empirical research on Vietnamese MPAs contributes a basis to explore challenges and opportunities in governing MPAs and identifying options to address the recurring challenges of unsustainable development and biodiversity loss in Vietnam. Although the study is case-specific, with a focus on MPAs, its findings have implications for other protected area initiatives, including terrestrial protected areas, and environmental policies in Vietnam and other countries facing similar contextual factors and challenges.

Studies on Vietnam's MPAs and fisheries have been dominated by findings from ecological sciences, with little contribution from social sciences (Khuu, 2018). This is despite the wide recognition that MPAs are complex social-ecological systems (SEs) (Ostrom, 2009; Jones, 2014) in which social and ecological systems coevolve through feedback mechanisms (Jones, 2014). A cross-disciplinary analytical framework is hence critical for invigorating systematic understandings of governing MPAs as complex SEs. This research is the first empirical attempt to diagnose the reality of governing Vietnam's MPAs as complex SEs. In the global protected area and biodiversity debates, the study explores the applicability of the MPAG framework in varied contexts, including its underlying concept of 'coevolutionary governance' (Jones and Long, 2021). Specifically, by contributing empirical evidence to the establishment of comparable MPAG and fishery governance case-study datasets, this work helps advance global protected areas research, including the ongoing debate over the social implications of the 30 × 30 target (Sandbrook et al., 2023).

2. Methodology

The growing emphasis on effective governance to reverse biodiversity loss (Díaz et al., 2019; Buchanan et al., 2020) is driving a shift in natural resource and MPA governance discourse. Rather than identifying the single 'best' or 'right' approach, there is an increasing recognition of the need for hybrid governance models that synergise top-down, bottom-up, and market-based governance approaches (Williamson, 1991; Kooiman, 1999; Jones, 2014; Jones and Long, 2021). Subsequently, co-management, including adaptive co-management, has formed the basis for numerous MPA management empirical frameworks (Kelleher, 1999; IUCN-WCPA, 2008; Borrini-Feyerabend et al., 2013; Hockings et al., 2019). However, these frameworks often highlight limited capacity and funding as the primary impediments to MPA performance (Bui et al., 2014; Gill et al., 2017; Graham et al., 2021) without providing actionable insights in specific contexts beyond 'increase capacity and funding' (Khuu, 2018). Empirical research on Vietnamese MPAs have revealed the failure of applying co-management theories in practice, attributed to inadequate consideration of contextual complexities and dynamic changes in social-ecological systems (Brown, 2013; Khuu, 2018). Co-management seems overly broad and idealist from an empirical standpoint (Jones, 2014). This study takes an alternative approach, employing the realist institutional analysis approach through the MPA Governance (MPAG) framework developed by Jones (Jones, 2014; Jones and Long, 2021).

The MPAG framework, comprising seven elements outlined in Table 1, provides a systematic structure for data collection, analysis, and presentation. It ensures clarity in the analysis of each case study and facilitates comparisons between case study analyses. While the MPAG

framework does not prescribe data collection methods, it emphasises the use of diverse and complementary approaches and data sources to avoid bias (Jones and Long, 2021). Our study used secondary data from literature sources (document analysis) and primary data from fieldwork (in-depth interviews and participant/non-participant observations) at three MPAs - Nha Trang Bay MPA (NTB-MPA), Cu Lao Cham MPA (CLC-MPA) and Con Dao National Park (CDNP). The selection of these three MPAs for governance analyses was primarily motivated by the results of the IUCN MPA Management Effectiveness Evaluation (MPA-MEE), which ranked CLC-MPA, CDNP and NTB-MPA as the three most effective MPAs in Vietnam (Bui et al., 2014). The governance analysis of each MPA, following the MPAG structure (Table 1), was published separately (Khuu, Jones and Ekins, 2021a, 2021b). This paper focuses on cross-case comparisons and the generalisation of governance analyses of these three MPAs. These were supplemented by qualitative data gathered during the first author's internship at IUCN Vietnam between June 2015 and May 2016. The presentation of these findings (Sections 3 and 4) also follows the MPAG framework's structure (Table 1).

2.1. MPAG framework, incentives and coevolutionary governance concept

The MPAG framework has the advantage of being empirically grounded, enabling a comprehensive understanding of complex social-ecological systems (SEs). It provides a structured approach to examine the governance framework of a specific MPA by analysing the applicability of 36 incentives across five categories (legal, knowledge, economic, communication and participation) (Box 1). This helps identify strengths and weaknesses of MPA governance, and explore realistic advice on addressing the weaknesses and reinforcing the strengths. The theoretical basis of the MPAG framework, 'coevolutionary governance', argues that resilience is achieved through the coevolution of human and ecological systems in the 'shadow of hierarchy' (Jones and Long, 2021; see Supplementary Material, Box S1). Consequently, effectiveness and equity can be attained by fostering a framework of co-evolving incentives that harness synergies between top-down, bottom-up and market-based governance approaches. These synergies, in which the strengths of one approach offset the weaknesses of the other, are case-specific, accounting for diverse challenges and contexts (Jones and Long, 2021). The 'shadow of hierarchy' notion highlights the critical role of state intervention in providing coordination and control to address conflicts, which is particularly relevant in Vietnam's political context given the tight supervision of the VCP.

The empirical use of the MPAG framework may exhibit bias and positionality, as data collection and analysis substantially depend on researchers' skills and preferences. Researchers need to recognise the strengths and limitations of data collection methods and know how to combine different sources effectively. These might be challenging for MPA practitioners and users as well as researchers. Despite these limitations, the application in over 50 MPA case studies across 24 countries, including from the Global South, demonstrates the MPAG framework's potential to support qualitative analyses of many more case studies. This will help refine the theoretical basis and empirical framework, as well as increase empirical evidence to inform biodiversity and sustainability debates concerning governance based on reality rather than ideals, assumptions and expectations (Jones, 2014).

2.2. Data collection and analysis

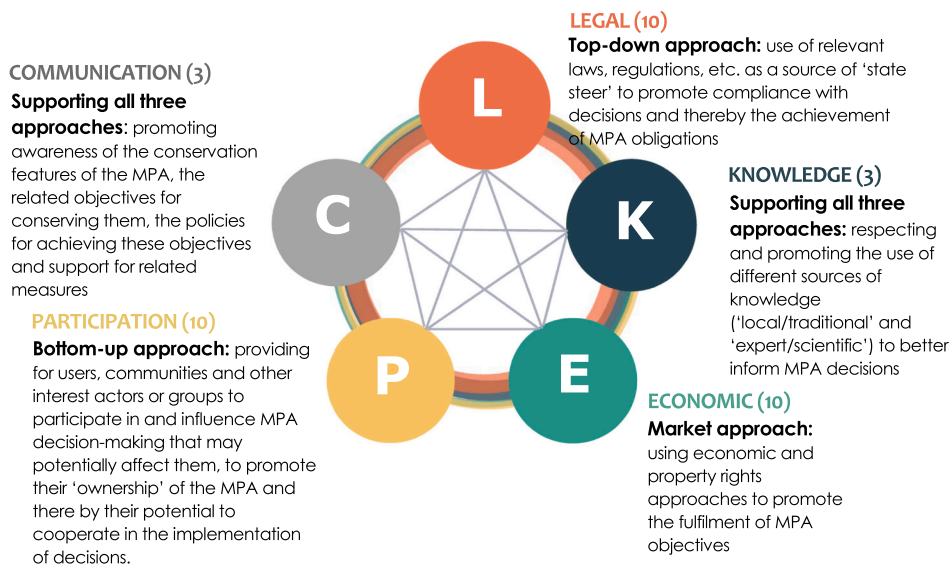
This study primarily used qualitative data gathered from extensive reviews of published and grey literature; 96 in-depth interviews with key MPA actors (MPA staff, local fishers, tourism operators, etc.) (see Supplementary Material, Table S1 for the interviews undertaken); and field notes from participant/non-participant observations (see Supplementary Material, Tables S2 and S3 for a list of observations). Quantitative data were used to illustrate ecological trends and patterns of

Box 1

MPA Governance (MPAG) empirical framework and incentives (adapted from Jones, 2014; Jones and Long, 2021).

Building on the coevolutionary governance concept, the empirical MPAG framework was intended to provide MPA researchers with a systematic approach and a critical analytical framework for unpacking the complexities and realities of governing MPAs as Social-Ecological Systems (SEs). The key focus of the MPAG framework is the **36 incentives** from **five incentive categories** that constitute the governance framework. Incentives are defined as “particular types of institution that are instrumentally designed in relation to an MPA to encourage actors (i.e., people involved) to choose to behave in a manner that provides for certain strategic policy outcomes, particularly conservation objectives, to be achieved” (Jones and Long, 2021). The key focus is assessing different perspectives on which incentives are being used and how they are used and interact with one another in a particular context to provide for **synergies between top-down, bottom-up and market-based governance approaches**. It also explores different perspectives on which incentives represent particularly important priorities for strengthening or introducing to improve effectiveness and equity. ‘Good practice’ tends to involve an appropriate combination of functionally integrated incentives that has coevolved over years, in keeping with the **synecology approach**, resulting in a resilient institutional or social system that both helps protect ecological systems through reducing the impacts of human uses and benefits from them through enhanced flows of ecosystem services. This portrays how social and ecological systems can coevolve through their interaction of human impacts and flows of ecosystem services.

The MPAG framework identifies **36 incentives** across **five categories**, which represent different governance approaches (as shown). The list of 36 incentives is not intended to be a check list which necessarily implies the need to increase the number of incentives. A governance structure that is supported by an appropriate number and diversity of incentives across different categories for a given MPA context tends to promote effectiveness and thereby a diversity of species, which thereby also promotes the resilience of ecosystems and enhanced flows of ecosystem services. The key is to assess how incentives across these five categories interact and coevolve in each MPA governance system (**synecology perspective**), including the cementing role of economic, knowledge, communication and participation incentives and the reinforcement role of legal incentives (the **‘shadow of hierarchy’** perspective). The concept of coevolutionary governance and the MPAG empirical framework are premised on the argument that “diversity is the key to resilience, both of species in ecosystems and incentives in governance system” (Jones, 2014).



ECONOMIC (10)	
i1	Payments for ecosystem services (PES)
i2	Assigning property rights
i3	Reducing the leakage of benefits
i4	Promoting profitable and sustainable fisheries and tourism
i5	Promoting green marketing
i6	Promoting diversified and supplementary livelihoods
i7	Providing compensation
i8	Investing MPA income or funding in facilities for local communities
i9	Provision of state funding
i10	Provision of NGO, private sector and user fee funding

COMMUNICATION (3)	
i11	Raising awareness
i12	Promoting recognition of benefits
i13	Promoting recognition of regulations and restrictions

KNOWLEDGE (3)	
i14	Promoting collective learning
i15	Agreeing approaches for addressing uncertainty
i16	Independent advice and arbitration

LEGAL (10)	
i17	Hierarchical obligations
i18	Capacity for enforcement
i19	Penalties for deterrence
i20	Protection from incoming users
i21	Attaching conditions to use, property rights, decentralisation, etc.
i22	Cross-jurisdictional coordination
i23	Clear and consistent legal definitions
i24	Clarity concerning jurisdictional limitations
i25	Legal adjudication platforms
i26	Transparency, accountability and fairness

PARTICIPATION (10)	
i27	Rules for participation
i28	Establishing collaborative platforms
i29	Neutral facilitation
i30	Independent arbitration panels
i31	Decentralising responsibilities
i32	Peer enforcement
i33	Building trust and the capacity for cooperation
i34	Building linkages between relevant authorities and user representatives
i35	Building on local customs
i36	Potential to influence higher institutional levels

and political factors make the development of effective and equitable MPAs exceptionally challenging.

International donors and NGOs have significantly supported the design, planning and development of MPAs and related policies (reflected by MPA milestones in Box 2). By 2021, Vietnam designated only 11 MPAs, covering a 1579 km² sea area (about 0.16% of its Exclusive Economic Zone (EEZ)), including 172 km² of No-Take Zones (NTZs) (0.02% of Vietnam's EEZ) (see Supplementary Material, Table S4 for the detailed list of Vietnamese MPAs). Decision No.742/QĐ-TTg remains the most explicit legislation guiding the development and management of Vietnam's MPAs. It signifies a milestone for the existing MPAs and the GoV to independently designate the remaining MPAs in the network with dwindling donor support. The decision emphasises the overarching objectives for Vietnam's MPA network - 'to conserve ecosystems and marine species of economic and scientific value contributing to the development of the marine economy and the improvement of livelihood of the coastal fishing communities' (GoV, 2010a). Accordingly, each MPA in the network has its conservation objectives/features (e.g., coral reefs, giant clams, etc.) as the MPA's 'ends' and operational objectives (capacity building, supporting livelihoods, etc.) as the 'means' by which the MPA's ends are met (Jones and Long, 2021).

3.2. Drivers and conflicts

This section discusses the major conflicts surrounding Vietnamese MPAs related to specific human activities. Small-scale fisheries and mass tourism are the main sectoral activities that explicitly and implicitly influence MPA conservation features and have undermined the fulfilment of MPA objectives in Vietnam. Wider-scale distal impacts related to climate change are beyond the governance capacity of individual MPAs (Jones, 2014), therefore, are not discussed as conflicts because they cannot realistically be addressed at a local level, though they can undermine conservation objectives.

3.2.1. Overfishing

Following *Doi Moi*, aggressive fisheries policies, notably the vessel subsidies system, providing fishers with capital for purchasing offshore fishing boats, have turned Vietnam's fisheries into a key economic sector. Fisheries accounted for 4–5% of Vietnam's GDP and 9–10% of exports in 2020 (VASEP, 2021). Fishing capacity and aquaculture expansion increased Vietnam's fisheries output from 1.6 to 8.3 million tonnes from 1995 to 2019 (Fig. 1a). Notably, during 1995–2019, the aquaculture area increased from 4536 km² to 11,478 km² (GSO, 2021a). Since 2005, aquaculture production has taken over marine capture fisheries (Fig. 1a).

Marine capture fisheries in Vietnam are mainly classified into nearshore and offshore (Pomeroy et al., 2009), with over 90% of fishing boats being nearshore (Nguyen, 2003; Dao and Pham, 2003; GoV,

2010b). Trawls, purse seines, gillnets, hook-and-line, lift nets and fixed nets are the most common fishing gears, with trawls and purse seines accounting for the majority of catch and profit (Fig. 1b). Despite an increase in yields and the number of high-capacity boats, Catch per Unit Effort (CPUE) declined even before 1990 (DERG and MPI, 2010), with lower-value fish (ponyfish, breams, lizardfishes, etc.) increasingly dominating catch composition (Teh et al., 2014). In the face of ongoing overfishing and declining wild fish stocks, Vietnam's fisheries remain *de facto* open-access due to inadequate monitoring and enforcement of fisheries regulations and non-compliance by fishers (Boonstra and Nguyen, 2010).

The decentralisation of fisheries management to province/district governments has arguably exacerbated the problems of uncontrolled exploitation and non-compliance. Fisheries management, framed by the Fisheries Law of 2003 (revised in 2017), is centrally overseen by the Hanoi-based Ministry of Agriculture and Rural Development (MARD), whereas provinces/districts can flexibly implement national regulations within the limits of local resources and management competencies. The multi-gear and multi-species nature of Vietnam's fisheries makes them harder to manage, especially when fisheries data are perceived as being of inadequate quality to meet fisheries management needs (Teh et al., 2014). Official catch statistics often neglect artisanal, subsistence and recreational fisheries (Teh and Pauly, 2018). The increasing mobility of fishers and diversity of fishing gears have aggravated inaccuracies in statistics of fishing boats and their registered catches and caused overcrowding of fishing boats in the nearshore waters (Symington and Nguyen, 2007). As such, the actual catch of Vietnam was assessed to be ~75% higher than the total landings reported to the FAO for the 1950–2010 period (Teh et al., 2014). This seascape of diminishing nearshore fish populations, weak enforcement of fisheries regulations, harmful subsidies and the tradition of law-breaking poses significant challenges to the operation of MPAs in Vietnam.

3.2.2. Mass tourism

Alongside fisheries, tourism has become a vital part of post-*Doi Moi* socio-economic development strategies (Secretariat of the VCP, 1994). Between 2000 and 2019, the number of tourist arrivals in Vietnam rose 7.7 times (Fig. 2). As corporate developments, including hotels, mega-resorts, amusement parks and cable car systems, have been promoted as a primary mechanism to attract more tourists, tourism practices in Vietnam typically represent forms of mass tourism (Suntikul et al., 2009; Fennell, 2015) rather than those of eco-/sustainable tourism (Honey, 1999; Butler, 1999).

Research shows that 90% of 'eco-tourism' guides lacked environmental understanding or were not trained to educate tourists on environmental matters (Pham, 2000). Besides, fees or sanctions for environmental violations are ineffectively enforced, and local communities are often marginalised from tourism benefits (Suntikul et al.,

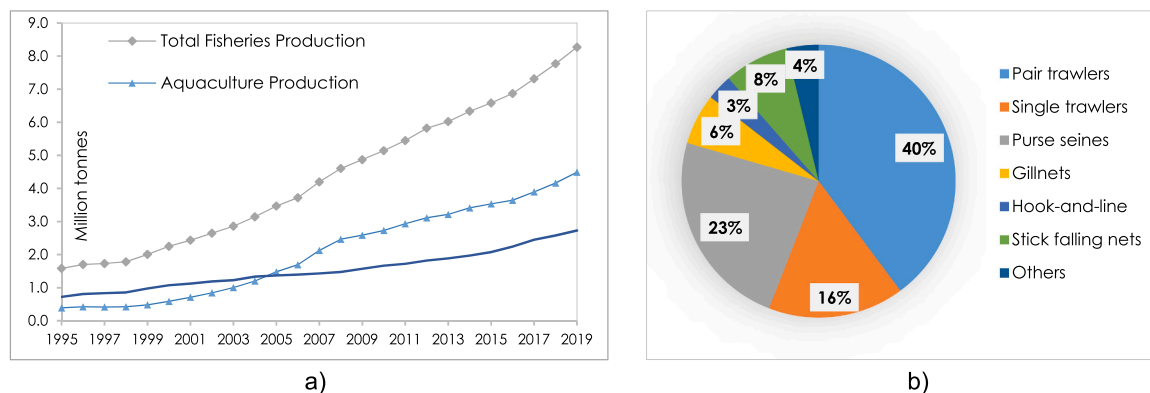


Fig. 1. a) Marine capture fisheries and aquaculture production of Vietnam during 1995–2019 (data Source: GSO (2021a)); b) Structure of marine capture fisheries yield by type of fishing gears in 2015 (RIMF, 2017).

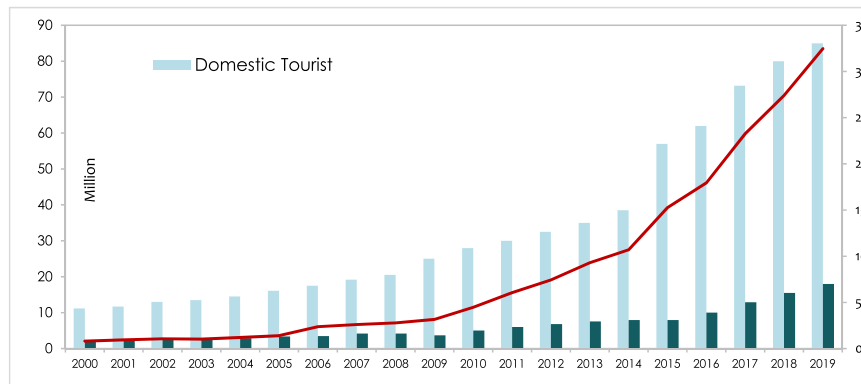


Fig. 2. Annual number of visitors and tourism revenue in Vietnam from 2000 to 2019 (data compiled from: VNAT, 2009, ITDR, 2016, GSO, 2021b);.

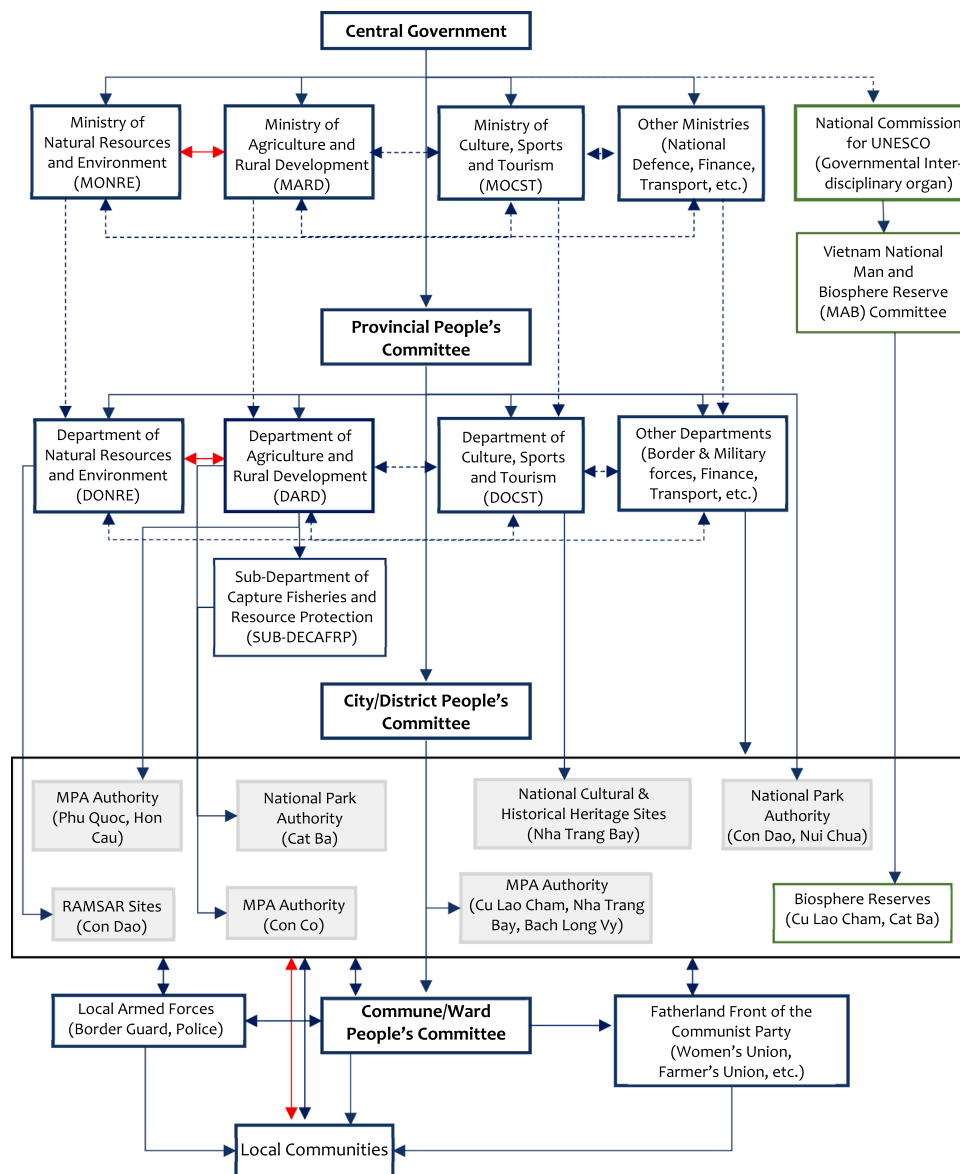


Fig. 3. Governance framework of MPAs in Vietnam (dash arrows depict weak interactions, red arrows depict conflicting relationship).

Table 2
Effectiveness score of the studied Vietnamese MPAs, following the MPAG effectiveness scale (Jones and Long, 2021).

Effective-ness score	Description (based on semi-structured interviews)
0 No impacts addressed; MPA designation may have increased impacts by undermining previous governance institutions.	NTB-MPA has an effectiveness score of 0 (Khuu et al., 2021a), because NTB-MPA failed to address all use impacts and even has contributed to the recent rapid growth of tourism. Despite being forbidden by law, destructive fishing still occurs during the daytime outside the NTZs (e.g., pair trawlers) and night-time within the NTZs (e.g., cyanide fishing). Subsequently, the fish stocks in the NTZs of NTB-MPA have dwindled: <i>'I remembered, in 2004–2005, there were plenty of fish and lobsters. But now, because of the MPA team selling the grounds to poachers, in five dives during a day, I could only see two snails. Frankly, the coral reefs are still not bad, but there is no more fish, and that disappoints experienced divers. I'm sure none of them would want to come back here again.'</i> [interview with a dive instructor, NTB-DI1]. The declining fish stocks in the nearshore waters have led to shifting fishing efforts to further offshore and the areas where fish are more abundant: <i>'About ten years ago, the anchovy stocks in NTB were so abundant that we only fished in the near-shore waters on a small boat with under 1000 W of light capacity. But now, because of no more near-shore fish, we must increase the light capacity to 10,000 W and go further up to 700 km, and spend 2–3 months at sea.'</i> [interview with a local fisher, NTB-LF4].
1 Some impacts beginning to be slightly addressed.	CDNP has an effectiveness score of 1 (Khuu et al., 2021b). Impacts from the exploitation of endangered species (green sea turtle, dugong, etc.) begin to be slightly addressed due to both protected area designation and national legislation prohibiting the exploitation and use of endangered species. Meanwhile, measures controlling unsustainable tourism and fishing practices are ineffective: <i>The most severe pressure on coral reefs now is illegal fishing, and tourist boats not using mooring buoys come second. Fortunately, there is no dynamite fishing, so the corals are in really good shape. It's beautiful here. But the number of fish has been declining since we came here, I can't say the exact percentage, but it's noticeable. There are many fishes that I don't see much these days, especially large groupers, because there is a terrible story behind it.'</i> [interview with a dive instructor, CD-DI1]
2 Some impacts partly addressed but some impacts not yet addressed.	CLC-MPA achieved an effectiveness score of 2 (Khuu et al., 2021a). So far, the enactment of the Fisheries Law of 2003, and the MPA designation, followed by the UNESCO Biosphere Reserve title, have together addressed some local impacts of destructive fishing and coral mining while leading to more destructive impacts caused by mass tourism and incoming fishers. <i>'Before the MPA was in place, in a day of diving, I could catch 100 kg of snails and sell them at 20,000 VND (~US\$1) per kg. And I easily earned 2 million VND (~US\$100) per day. The fish were so abundant that I could catch them selectively based on their sizes and appearance. But since tourism thrived in 2009, the demand for seafood has become greater than the supply, forcing local fishers to make more effort to meet the demand and make a decent income. Now, within a day, if I tried my best, I would only get 15–20 kg of snails, which I usually sell at 40,000 VND (~US\$2) per kg and earn 800,000 VND (~US\$40). But in this 20 kg, I am no longer picky as before. I just take whatever I see.'</i> [interview with a local fisher, CLC-LF2]. Recent research on the 'Paper Park Index' has also listed CLC-MPA as one of the top ten paper parks globally in terms of its lack of effectiveness in managing fishing activities (Relano and Pauly, 2023). Based on the IUCN's MPA-MEE and the first author's participant observation gained through key national MPA conferences and workshops (refer to Table S3 of Supplementary Material), CLC-MPA is widely recognized as the role model of Vietnamese MPAs in terms of certain successes in implementing co-management mechanisms and encouraging local communities to participate in MPA activities. Therefore, there is arguably no MPA achieving a score higher than that of CLC-MPA.
3 Some impacts completely addressed; some are still only partly addressed.	
4 Most impacts addressed but some not completely	
5 All impacts from local activities completely addressed	

2009). Under such circumstances, the designation of MPAs or national parks (NPs) is more of a means to attract foreign aid and to support tourism development than promote biodiversity conservation and local community priorities (Marsh, 1987; Sunitikul et al., 2009).

3.3. Governance framework/approach

According to the MPAG framework, the governance structure of each MPA may lie or be nested within one or more of four categories: 1) state governed; 2) decentralised to local institutions with state oversight; 3) governed by local communities; and 4) governed by private sector entities and/or NGOs (Jones and Long, 2021). In the context of transitioning into a communist market-oriented state, characterised by continuous decentralisation to local governments under the VCP's tight supervision, Vietnam's MPA governance framework is typical of the category (2) – decentralised to local institutions with state oversight. The decentralised governance approach of Vietnamese MPAs exhibits certain similarities with that of the others in Southeast Asian in terms of the significant involvement of international donors and NGOs in MPA design and implementation stages and the transferral of responsibilities to provincial/district governments and state institutions following the official designation of MPAs (e.g. Indonesian MPAs (Clifton, 2013; Yunitawati and Clifton, 2021), Philippine MPAs (Dygico et al., 2013), etc.). However, the VCP's absolute control over Vietnamese society,

including MPA initiatives, is comparable to the governance structure of Chinese MPAs (Qiu, 2013), which are prone to the issues associated with the party-state system (patronage networks, endemic corruption, etc.). These similarities and differences further highlight the importance of context and the necessity for empirical research on individual MPAs to determine which mechanisms work best in a specific context.

The organigram (Fig. 3) illustrates the main institutional structures for Vietnamese MPAs, as well as the complicated and fragmented attributes of these structures. At the central level, major conflicts persist between the Ministry of Agriculture and Rural Development (MARD) and Ministry of Natural Resources and Environment (MONRE). In the marine realms, MARD has jurisdiction over certain flora and fauna species, including fish and coral reefs (GoV, 2013), whereas MONRE oversees the 'sea spaces', seawater quality and wider biodiversity, alongside the mandate to allocate property rights and permit business activities that could damage the environment in such 'spaces' (GoV, 2002). Other ministries, such as the Ministry of Culture, Sports and Tourism (MOCST) and Ministry of National Defence (MOD), are also involved in governing MPAs, though to a lesser degree. Due to increasing decentralisation, the management responsibilities of MARD and MONRE have been progressively decentralised to province/district government agencies - the Department of Agriculture and Rural Development (DARD) and Department of Natural Resources and Environment (DONRE), respectively. The Provincial People's Committee (PPC)

administers DARD and DONRE.

The institutionalisation of MPA authorities varies among provinces/districts. Usually, independent MPAs have a management authority being institutionalised as a 'revenue-generating agency' to undertake daily management activities (patrolling, monitoring, etc.). These MPA Authorities can provide 'ecotourism' and other services to generate income for MPA operations but have no authority over detaining, deterring, and imposing administrative sanctions for violations of MPA regulations. Independent MPAs administered by the district government include Nha Trang Bay, Cu Lao Cham and Bach Long Vy MPAs. National parks (Cat Ba, Con Dao, Nui Chua) have the terrestrial component being overseen by the Forest Protection Department (FPD) and marine counterpart being managed by the Directorate of Fisheries (D-FISH), all of which are under MARD. Some MPAs are located in internationally designated areas and other types of national protected areas, which involve more agencies in the governance framework (Cu Lao Cham MPA is within the UNESCO Biosphere Reserve).

At an MPA-site level, independent MPA wardens oversee the enforcement of MPA regulations and often rely on local armed forces, including the border guard (under the MOD) and police (under the district/commune governments), for sanctioning violations of MPA restrictions and regulations. In NPs, forest rangers are responsible for daily management activities in both protected forest and MPA components. The participation of local communities in governing MPAs has mainly been promoted by international donor-funded projects in which access to local people has been gained through gatekeepers, including the ward/commune governments or mass organisations under the Vietnamese Fatherland Front, and the close supervision of the VCP.

3.4. Effectiveness

This study assessed the effectiveness of MPAs in terms of the degree to which the identified impacts, particularly of fishing and tourism (Section 3.2), have been mitigated to better achieve conservation objectives. Although an effectiveness score assessed for each MPA was solely based on the qualitative judgements drawing on different sources of qualitative data (discussed in Section 2), the judgements were informed by published scientific data on the ecological status and trends of the conservation features of each studied MPA (Khuu et al., 2021a, 2021b).

Table 2 shows the effectiveness score on the MPAG effectiveness scale of zero (no impacts addressed or may have worsened) to five (all impacts addressed) for each studied MPAs. This scoring agrees with the IUCN's MPA-MEE (Bui et al., 2014), which ranked CLC-MPA, CDNP and NTB-MPA as Vietnam's three most effective MPAs in terms of management structure, financing, staff capacity, facilities, and management planning. Despite offering valuable insights, the MPA-MEE's focus on assessing management structures tends to simplify the complexities of MPA implementation processes and interactions among key actors. Therefore, the MPAG approach to rating MPA effectiveness, with a focus on the progress of mitigating impacts and achieving MPA objectives, arguably provides more focused and actionable insights into the effectiveness and equity of MPAs (Jones and Long, 2021).

Blast fishing and coral mining within Vietnamese MPAs may have halted due to local fishers' ability to afford less-damaging methods and the state's vessel subsidies scheme, rather than MPA regulations, i.e., a coincidental benefit of MPAs (Khuu, 2018). Without existing measures and capacity for sustainable fisheries management, MPA management often disregards fisheries management measures. Our findings in Table 2 show declining fish numbers and sizes in all three MPAs. A recent study on Phu Quoc MPA also found that only 1% of the total studied fish individuals were longer than 20 cm (Van Tran et al., 2022). Likewise, the rate of tourism development in all three MPAs remains rapid, with increasing impacts. Efforts have been made in CLC-MPA (cap on tourist number) and CDNP (theoretical cap on tourist number in the key turtle nesting sites) to control the impacts of tourism (Khuu et al., 2021a,

2021b). However, the impacts and driving forces of tourism development are too strong and complex compared to the mitigation measures used. Ultimately, the studied MPAs have addressed few, if any, of the environmental impacts of tourism (trampling on corals, collecting coral specimens, consuming protected species, etc.). Meanwhile, social costs of tourism have often been overlooked, leading to numerous equity issues, such as the commanded relocation of fishing villages in NTB-MPA and the capture of tourism benefits by incoming tourism operators in CLC-MPA. Furthermore, despite being significant and evident, changes in local resource use patterns (CLC-MPA) and other aquaculture pollution impacts (NTB-MPA) have not been accounted for (Khuu et al., 2021a).

Overall, under strong development forces, Vietnam's marine ecosystems and habitats have degraded severely over the last two decades, including in MPAs. A recent report shows that the remaining coral reef area in Vietnam is about 622 km², of which 34% is covered by MPAs (Khuu et al., 2021). This indicates a 51% decrease in coral reef area in 20 years from the baseline of 1222 km² in 2002 (Burke et al., 2002) and ineffectiveness in governing MPAs and conserving priority habitats in Vietnam.

3.5. Incentives

Table 3 summaries the incentives used and those that are priorities for strengthening or introducing to better address the impacts on MPA objectives and improve governance effectiveness and equity. The ordering of incentives (i1 to i36) is based on the numbered categorisation of the MPAG framework in Box 1 (Jones and Long, 2021).

4. Discussions

This section, based on the analytical results in Section 3, identifies key cross-cutting issues in governing MPAs in Vietnam and suggests potential strategies to address these challenges and improve MPA governance frameworks. These strategies, seeking an appropriate combination of incentives and thereby coevolutionary synergies between top-down, bottom-up and market-based governance approaches (Jones and Long, 2021), focus on three key areas: i) increasing the steering role of the state; ii) preventing 'unholy alliances' between province/district governments and corporate interests; and iii) empowering civil society.

4.1. Key issues in governing MPAs in Vietnam

4.1.1. Political will

A lack of political will from the central government and political leaders is increasingly considered a primary factor contributing to ineffective governance and socio-economic reforms worldwide (Brinkerhoff, 2000; Post et al., 2010; Carbonetti et al., 2014). In the Vietnamese context, where the VCP exerts substantial control over civil society and natural resources, the impact of weak political will for biodiversity conservation on the development and sustainability of protected areas is particularly notable, especially given the strong political will for economic development. Our analysis of incentives (Table 3) highlights how weak political will tends to lead to weak incentives, especially the ambiguous and fragmented legal frameworks for MPAs (i23), inadequate oversight over decentralisation processes (i21), insufficient capacity for enforcement (i18), limited financial resources for patrols and biodiversity monitoring (i9, i10), and the wider issues associated with endemic corruption that further undermine effective and equitable MPAs (Section 4.1.2).

4.1.2. Endemic corruption

Despite discerning the need to revise the ambiguous legal framework and strengthen cross-jurisdictional coordination (i22, i23) (Bui et al., 2014; Khuu et al., 2021), the VCP leaders seem unwilling to make changes that would reduce state bureaucracies, and affect the alliances

Table 3

Summary of incentives applied in Vietnam's MPA governance frameworks (Y) for CLC-MPA, CDNP and NTB, including those that are particularly important priorities for strengthening (Y*) and introducing (N*), based on the MPA Governance Framework (Jones and Long, 2021).

INCENTIVE	USED	HOW/WHY?	
ECONOMIC	i1. Payment for Ecosystem Services (PES)	N*	PES (e.g., blue carbon) could be beneficial but the weak regulatory framework could undermine this incentive at a site operational level due to the risk of PES rent-seeking and fund appropriation at higher levels.
	i2. Assigning property rights	Y*	Property rights (both land and sea) were assigned to tourism developers or local communities, but usually with no conditions/environmental standards attached, i.e., lacking i21.
	i3. Reducing the leakage of benefits	Y*	Local people were employed for short-term work in tourism or as MPA wardens or were granted concessions to operate tourism in the MPA. This is insufficient to promote the fair distribution of costs and benefits.
	i4. Promoting profitable and sustainable fisheries and tourism	Y*	NTZs ban all kinds of extraction while allowing some sustainable tourism activities (snorkelling and scuba diving). Other zones allow compatible uses. However, the ineffective enforcement (i18) of NTZs has undermined this incentive.
	i5. Promoting green marketing	Y*	Green marketing, including promoting sustainable and community-based tourism and eco-labelling local seafood products, is undermined by the impacts of overfishing and mass tourism, leading to degraded reefs, i.e., 'greenwashing'.
	i6. Promoting diversified and supplementary livelihoods ⁷	Y*	Diversified livelihoods were promoted through capacity building, sustainable aquaculture, ecotourism, handicrafts, etc., which are short-term and insufficient to compensate for the loss of fishing grounds and livelihoods, and even arguably contributed to the current trend of mass tourism.
	i8. Investing MPA income/funding in facilities for local communities	Y*	The upgrade of medical stations, public toilets, public markets, etc. were mostly supported by donor-funding. However, this is undermined by unfair decision-making at the commune level, often leading to inappropriate allocation of funds and the capture of benefits by elites.
	i9. Provision of state funding	Y*	Since donor funding phased out in 2011, MPAs rely mainly on user fee funding with state funding being limited to covering basic infrastructures and staff salaries. This is insufficient to take over from donor-funding and provide long-term strategic funding.
	i10. Provision of NGO, private sector, and user fee funding	Y*	User fees are the major funding source for MPA operation, but fee collection is inefficient and can be misappropriated, so the generated income is insufficient to cover the costs of biodiversity surveys and regular patrolling. NGO funding is irregular and less integrated into strategic conservation objectives.
	COMMUNICATION	i11. Raising awareness	Y*
i12. Promoting recognition of benefits		Y*	Perception by local fishers of potential benefits (spill-over/exports, tourism, etc.) has been promoted through awareness-raising and capacity-building programmes (i11). However, these benefits are undermined by ineffective enforcement (i18) and the growing impacts of incoming users (i3).
i13. Promoting recognition of regulations and restrictions		Y*	Recognition of zoning regulations was promoted through leaflets, website, signboards, and outreach programmes, most of which are unsuccessful in providing for the achievement of conservation benefits.
KNOWLEDGE	i14. Promoting collective learning	Y*	Collective learning was adopted through participatory planning (via community meetings and consultation workshops), participatory biodiversity monitoring (by scientists and community members) and participatory socio-economic assessments, most of which were dependent on donor/NGO funding, so were too short-term.
	i15. Agreeing approaches for addressing uncertainty	Y*	The designation of buffer zones surrounding CLC-MPA, for example, represents a precautionary approach to ensure sustainable fishing practices surrounding the MPA, but this is undermined by insufficient enforcement capacity (i18) and shortage of funding (i9, i10).
INCENTIVE	USED	HOW/WHY?	
LEGAL	i17. Hierarchical obligations	Y*	Despite existing national laws and sectoral strategies supporting the enforcement of MPA regulations (refer to Supplementary Material, Table S5 for the summary of the legal framework governing MPAs in Vietnam), the ambiguous legal framework has challenged the effective management of MPAs. Thus, the increasing decentralisation and local socio-economic development and political priorities have undermined MPA obligations.
	i18. Capacity for enforcement	Y*	MPA authorities often lack capacity for effective enforcement due to overreliance on donor funding, shortage of state funding for MPA activities and misappropriation of MPA user fees.
	i19. Penalties for deterrence	Y*	Large fines can be imposed for breaching national laws associated with fisheries, environmental protection, and biodiversity conservation. However, due to the lack of enforcement capacity (i18), fines are rarely applied and can be quashed through political connections.
	i20. Protection from incoming users	N*	The recurrent issues, including MPA fisheries benefits being captured by incoming fishers and tourism benefits being captured by the unholy alliances between the province/district governments and corporations, represent a lack of measures in protection from incoming users, which must be integrated into MPA governance frameworks.
	i21. Attaching conditions to use, property rights, decentralisation, etc.	N*	There is a need to attach performance standards and conditions (related to the MPA conservation objectives and equity issues) to the user and property rights issued to tourism developers/operators and local fishers and to the decentralisation to province/district levels with national state oversight.
	i22. Cross-jurisdictional coordination	Y*	Although coordination mechanisms among responsible agencies are legislated, coordination rarely exists at the site level. Primary reasons include the sophisticated and ambiguous legal framework and too much decentralisation without sufficient oversight from the central government. Within this context, MPA Authorities lack power to influence decision-making (i36) and for cross-sectoral coordination.
	i23. Clear and consistent legal definitions	N*	The legal framework governing MPAs, forests and wetlands in Vietnam is fragmented and conflicting, accompanied by a lack of cross-jurisdictional coordination (i22), highlighting the need for clarity and consistency in defining the jurisdictional boundaries and responsibilities of different authorities.
	i26. Transparency, accountability, and fairness	N*	Increasing transparency in decision-making, handling of user fees and enforcement of NTZ regulations is a priority. A lack of authority in the institutional design of MPA Authorities is problematic regarding both transparency in MPA management activities and MPA authorities' accountability for achieving conservation objectives.

(continued on next page)

Table 3 (continued)

INCENTIVE	USED	HOW/WHY?
PARTICIPATION		
i27. Rules for participation	Y*	The participation of representative user groups, including the tourism sector, in conservation is not well recognised in national legislation. Rules for the participation of all user groups thus need to be integrated into the legal framework governing MPAs and explained to all participants to ensure the fair sharing of responsibilities and distribution of MPA costs and benefits.
i28. Establishing collaborative platforms	Y*	As most collaborative structures/platforms (community consultation groups, community-based coral reef monitoring groups, MPA village committees, etc.) were modelled by donors and NGOs without having been institutionalised by the government, these are weakly maintained after donor funding ended.
i31. Decentralising responsibilities	Y*	Following the increasing decentralisation, the MPA management responsibilities have been decentralised to lower-level governments without sufficient resources or related conditions attached to decentralisation (i21). Nor is there sufficient oversight of the city government's compliance with national aims by the national government (i21).
i32. Peer enforcement	Y*	Peer enforcement applied to encourage the participation of local communities, divers, tourism operators, etc. in MPA operation are impractical, mainly due to the shortage of funding (i9, i10), ineffectiveness in enforcing MPA regulations (i18), lack of transparency in handling of user fees and violation reports and a reluctance to enforce restrictions on friends, family, etc. (i26).
i33. Building trust and the capacity for cooperation	Y*	Trust among local fishers and dive operators is undermined by the overselling of potential MPA benefits (i12), lack of enforcement capacity (i18) and increased incoming development forces (i3, i20).
i34. Building linkages between relevant authorities and user representatives	Y*	Building linkages amongst MPA Authorities, key user groups (fishers, dive operators, etc.) and relevant authorities is urgently needed. The leadership of province/district governments is instrumental in building these linkages and conflict resolution.
i35. Building on local customs	Y*	Local customs, which were displaced by the relocation of fisher villages and loss of access to fishing grounds through tourism developments, can be reserved by strengthening the collaborative platforms (i28) and ensuring the equitable sharing of MPA costs and benefits.
i36. Potential to influence higher institutional levels	Y*	Without authority or capacity to influence higher institutional levels, MPA authorities lack sufficient capacity to ensure the long-term sustainability of MPAs at the current rate of corporate tourism and incoming fisheries, especially given the priority of economic development.

with non-state actors and rent-seeking opportunities. Thus, donors' prescription of MPA collaborative management mechanisms with NGOs prioritising disbursement targets has been taken as the decentralisation of MPA Management Authorities to province-/district-level governments without providing them with sufficient oversight and technical and financial resources to meet strategic conservation objectives (i21). This has severely hampered MPA enforcement (i18) on the ground. The lack of enforcement capacity is often mediated by joint enforcement between MPA authorities and the local armed forces. However, this joint enforcement is primarily reliant on the capacity and willingness of local government agencies and funding from NGOs (i10), which is often captured by the vested interest among local government agencies, NGOs, and local elites (Section 4.1.3). This has reinforced endemic corruption and undermined social equity at a local level in most Vietnamese MPAs.

Alongside the lack of political will and nationwide decentralisation of state management, rampant corruption is at the heart of the ineffectiveness of MPA governance incentives. Donor-funded MPA projects were viewed as a chance to appropriate funds among some of those involved, including central and local government officials, development agencies and NGO staff, Civil Society Organisations (CSOs) and community members under the umbrella of the party-state system and its patronage networks (Khuu, 2018).

Given a lack of political will and oversight from the central government in decentralisation processes (i21), province/district governments have gained more autonomy over local resources and neglected the decentralised responsibility for self-financing MPA operations. Corruption occurs daily in MPAs, such as the misappropriation of MPA user fees (NTB-MPA), speed money (e.g., the management of tourist boats in NTB-MPA), bribery (e.g., illegal fishers bribed fisheries inspectors in CDNP) and misuse of position (e.g., selling the fishing grounds and petrol to fishers in NTB-MPA) (Khuu, Jones and Ekins, 2021a, 2021b). These corruption-related issues are, however, pervasive throughout the planning, designing and management of MPAs in Vietnam and have considerably contributed to lower funding for MPAs, less productive activities, poorly maintained infrastructure and equipment, increased social injustice and decreased biodiversity, all of which undermine MPA effectiveness and equity. These corruption-related issues

in governing MPAs demonstrate the widespread corruption issues in all Vietnamese state economic sectors and society, therefore they should never be overlooked in all environmental policy research and practices.

4.1.3. Role of NGOs and the private sector

The role of international organisations and NGOs (IUCN, WWF, etc.) in MPAs, characterised by their lobbying capacity, interest in expanding the PA network inspired by the 'human out' approach and emphasis on disbursement targets, has been critiqued for its potential to lead to 'paper park' designations (De Santo, 2012) and neglect of local community needs (Corson, 2012). This has led to short-sighted and unsustainable NGO projects (e.g., raising awareness (i11), promoting diversified and supplementary livelihoods (i6), etc.), which are often incompatible with national and local contexts and conditioned the unholy alliances between the state, NGO and corporate interests. Particularly, NGO-promoted communication incentives (i11-i13) often lead to local users' misperceptions about the role of MPAs, resistance, and thereby, lack of cooperation and compliance amongst local communities. Meanwhile, the provision of donor and NGO funding (i10) has been captured by the state-NGO-private actor patronage networks. At local levels, NGOs tend to focus the resources on CSOs or experts within their networks and leave the implementation tasks to these stakeholders rather than closely engaging with wider local communities, resulting in the disproportionate sharing of MPA costs and benefits through confining participation to local elites, coupled with the risks of rent-seeking and clientelism. This vicious cycle of governance problems has undermined MPA effectiveness and exacerbated social inequities.

Likewise, in the 'unholy alliance of global-level environmental and commercial interests' (Homewood et al., 2009), with political will towards development priorities and NGOs advocating for tourism as promising alternative livelihoods (i6) and selling potential benefits of MPAs (i12), MPA tourism benefits are being captured by corporate tourism developers and decision-makers while small-scale fishers are gradually marginalised. Economic, communication and participation incentives are the most used categories but also often important priorities for strengthening. Overreliance on donor funding, channelled through the state budget (i9) and NGOs and the private sector (i10) in the unholy alliances of state, NGO and private actors, has led to

insufficient resources and unsustainable funding for daily operations to effectively address the localised impacts of overfishing and over-tourism (often through promoting diversified and supplementary livelihoods (i6), potential fishing and tourism benefits of MPAs (i4), zoning regulations and green marketing (i5), providing infrastructure and facilities (i8)). The underfunding and capacity shortfall problems are often mediated by income from user fees (i10) that are often inadequate to ensure regular and effective patrolling and comprehensive biodiversity monitoring, particularly given the inefficiency in collecting and allocating them. NTB-MPA typically illustrates how the MPA underfunding problem is exacerbated by a lack of transparency in the fee collection and management processes (i26) and petty corruption (Khuu, Jones and Ekins, 2021a). The inappropriate use of NGO and MPA user fee funding has also undermined collective learning (i14), resulting in occasional reef-check surveys that are seldom used to inform decision-making.

4.1.4. Social equity

Given the VCP's absolute control over all aspects of social life and the confined space for civil society, issues associated with equity and stewardship are a major area of weakness in the governance of Vietnamese MPAs. Due to a history of obeying the VCP's top-down commands, local people, especially those most affected by MPA regulations, are often passive and submissive (Khuu, 2018). Because the central state lacks both the capacity to manage MPAs directly and the political will to use the available capacity, as well as unwillingness to empower local people, the use of participation incentives to promote collaborative and inclusive MPA management has mainly focused on decentralising responsibilities (i31) to province/city government. This decentralisation has deepened the unholy alliances between state, NGO and business actors, with decision-making being captured by clientelism and rent-seeking. As such, the bottom-up mechanisms (collaborative platforms (i28), participatory biodiversity monitoring and coral reef rehabilitation (i14), peer enforcement through (i32)) are often short-term and jeopardised by the strong forces of incoming users, limited benefits gained from participation, the disproportionate share of costs to locals, and lack of institutional support for participation. Particularly, the costs of MPA designation to the fishers were compensated mainly by promoting green marketing (i5) and diversified livelihoods (i6), while most of the related benefits are not viable due to unrealistic design and ineffective enforcement. Furthermore, measures to prevent the leakage of benefits (i3), protect from incoming users (i20) and realise benefits from diversified livelihoods (i6) are too weak to withstand the intensified forces of incoming fishing and tourism development, which have shifted local resource use patterns, gradually eroded traditional customs (i35), and undermined trust towards MPA Authorities (i33).

4.2. Strategies for improving MPA governance

4.2.1. Increasing the steering role of the state

To mitigate the impacts of incoming fishing and tourism, it is essential to strengthen the state's role, political will and leadership through devising a coherent legal framework building on hierarchical obligations (i17), including international targets, high and equitably applied penalties for deterrence (i19) that all user groups understand; and effective cross-jurisdictional coordination mechanisms (i22) that ensure decisions made by all relevant sectors are coherent and contributing to the achievement of MPA objectives. The framework should also promote clarity and consistency (i23) in defining thresholds for development activities in MPAs to strengthen the decentralisation of responsibilities (i31), including the jurisdictions, roles, and responsibilities of different authorities. It should also provide an institutional basis for the participation of local communities and users (i27) and a platform for this (i28), based on different knowledge sources (i14). The legal framework must also encompass a long-term financial mechanism for effective enforcement and monitoring, which includes continued state funding (i9) augmented (but not replaced) by funding

from NGOs and the private sector and user fees (i10). Nonetheless, as endemic corruption persists, devising such a framework critically depends on the political will of the VCP leaders, which may be stimulated by attaching conditions (i21) to bilateral or multilateral economic cooperation agreements. This strategy has proven effective in pressuring the GoV to lift the European Commission's yellow card, which was issued in 2017 to warn against Vietnam's internationally scaled IUU fishing that could lead to trade sanctions (EJF, 2019), by reforming the fisheries legal framework towards sustainability (GoV, 2017; GoV, 2021).

4.2.2. Preventing 'unholy alliances' between province/district governments, NGOs and corporate interest

Under the highly decentralised governance framework, retaining some degree of state control is crucial to prevent unholy alliances between provincial/district governments and corporate interests and steer decentralisation towards achieving strategic biodiversity conservation objectives. This requires clarity in defining development-conservation boundaries and thresholds for developments (i23) in the legal framework, and environmental performance standards attached to decentralisation (i21) to ensure local actions support the fulfilment of strategic objectives, rather than undermine them. The decentralisation issues might also be addressed by promoting local small-scale and sustainable development to reduce the leakage of benefits (i3) to incoming fishers and tourism developers. This could be promoted by assigning community property rights (i2) with environmental performance standards attached to such rights (i21); enhancing capacity for enforcement (i18); and promoting transparency, accountability, and fairness (i26) in MPA management. The effectiveness of such incentives will increase the recognition of MPA regulations and restrictions (i13) and the potential benefits of MPAs (i12), thereby driving behavioural changes towards sustainable exploitation among local and incoming users.

4.2.3. Empowering civil society

Empowering civil society and local communities can be attained by actively engaging the private sector, redirecting the role of NGOs, and promoting pride, community stewardship and social capital. First, more meaningful engagement of businesses requires well-designed property rights with conditions attached to such rights (i2, i21). There should also be an obligation to assign a proportion of tourism revenue to local communities or re-investing part of tourism income in infrastructure and facilities for local communities (i8). Second, NGOs should redirect their technical expertise, facilitation and negotiation skills toward conservation initiatives that are more focused on the engagement of the private sector and empowering local communities, while ensuring that such initiatives are consistent with strategic conservation objectives, to avoid unholy alliances between NGOs, corporations, and local organisations from capturing decision-making. These initiatives should also account for the views and needs of local communities while realistically recognising how local communities are constrained by and embedded in VCP structures. Third, equitable cost-benefit sharing mechanisms, such as Payments for Ecosystem Services (PES) (i1), might help promote local pride, community stewardship and social capital. However, PES pilots in Vietnam revealed that the PESs do not address deforestation and can cause various equity issues (To and Dressler, 2019; Pham et al., 2021). Therefore, given the culture of clientelism and rent-seeking, more realistic and progressive solutions should be prioritised over PESs. These include incentivising local small-scale and sustainable development to reduce the leakage of benefits to incoming fishers and tourism developers (i3) through assigning community property rights (i2) with environmental performance standards attached to such rights (i21); enhancing capacity for enforcement (i18); and promoting transparency, and accountability and fairness (i26) in MPA management.

Social capital and trust can be gained from more realistic designs of livelihood options (i6) with sufficient inputs from interdisciplinary sciences and local perspectives, encouraging small-scale rural

developments and promoting green marketing (i5), with a focus on ecotourism in alignment with the fair sharing of costs and benefits (i3, i4). Also, raising awareness (i11) should strategically target tourism operators/developers, tourists (e.g. by regularly engaging tourism operators/developers and tourists in the collection of plastics and crown-of-thorn starfish), policy-makers (e.g. by engaging policy-makers in MPA-related impact assessments, etc.), and local users (e.g. through more systematic, innovative and engaging awareness-raising initiatives or focusing on educating young generations of MPA communities), provided that the effectiveness of NTZs is observable to everyone (i12). Furthermore, raising the awareness (i11) of the VCP's leaders on the importance of MPAs should be continued or increased, and the role of NGOs should be more radical in this regard.

Overall, the strategies suggested here emphasise that resolving the recurring issues in the governance of MPAs in Vietnam requires an appropriate combination of incentives across five incentive categories that should not overlook the stabilising effects of legal incentives and state interventions in the implementation of all incentives. Accordingly, the political will and leadership capacity of the VCP towards synergising the needs of biodiversity conservation and sustainable development is the most pivotal factor in effectively and equitably governing MPAs and wider natural resources in Vietnam. With the recurring issues and potential solutions discussed here, this research particularly argues that practical solutions to ineffective protected areas around the world should expand beyond addressing the concerns about widespread shortfalls in enforcement capacity and financial resources (Gill et al., 2017; Coad et al., 2019; Graham et al., 2021). Instead, practical solutions should arguably account for the diversity and complexity of governance structures and incentives by understanding and recognising socio-political realities (particularly the unholy alliances between the state, NGOs, and businesses), linkages between capacity for enforcement (i18), financial resources (i9, i10) and other incentives from different incentive categories, underlying lack of political will for enforcement and oversight of MPA management, and major social equity issues.

5. Conclusion

Our findings highlight the recurring challenges of governing MPAs in Vietnam, notably a severe lack of steer and intervention from the central state, significant decentralisation of management responsibilities to province/district governments with no conditions attached, and minimal participation from local communities and businesses. Consequently, in many cases, decision-making and benefits are captured by unholy alliances between province/district governments, corporations, and NGOs, leading to the erosion of local stewardship and social capital. As such, MPAs have arguably become a vehicle for supporting socio-economic development strategies (particularly through mass tourism) rather than contributing to the CBD and UN Agenda 2030 targets. Addressing these challenges requires a better framework for effective and equitable MPA governance with reforming the legal framework, enhancing enforcement capacity, and increasing the state control in decentralisation being the most urgent priorities. Encouraging more small-scale sustainable development is challenging at present, given the short-term focus on rent-seeking among state actors, but effective enforcement and increasing public awareness can create conditions for progress. Promoting pride, stewardship, and social capital can be considered as a medium to long-term priority to empower local communities. Given Vietnam's remarkable socio-economic achievements since 1986, achieving these strategies is feasible if the VCP has sufficient and appropriate political will to proceed. Perhaps, the recent increases in the number and complexity of environmental crimes (Cao, 2017; Dinh, 2019; Dang et al., 2021) emphasise the urgent need for structural reforms in Vietnam's environmental protection and socio-economic development policies.

This study theoretically supports the constructivist and realist viewpoints of the MPAG framework's coevolutionary governance

theoretical basis (Jones, 2014; Jones and Long, 2021), which emphasises that the state should not be retreated or hollowed out or replaced by networked governance among civil society actors and organisations. Instead, the state should be repositioned and/or reconfigured; and continue to provide regulatory functions and the centrality to ensure that strategic objectives are fulfilled (Jones, 2014). In the context of global sustainability agendas, considering the cross-cutting complexities of political will, community involvement and financial status, no single governance approach will be effective. Thus, an appropriate and realistic combination of governance approaches (top-down, bottom-up, market-based governance, awareness-raising and knowledge-sharing) – by fostering a diversity of functionally integrated incentives in coevolutionary governance in the 'shadow of hierarchy' – can provide for the integration of biodiversity conservation, sustainable development and social equity (Jones, 2014; Jones and Long, 2021) – which is the particular focus of the UN Agenda 2030 on Sustainable Development Goals and CBD's post-2020 Global Biodiversity Framework.

CRediT authorship contribution statement

Duong T. Khuu: Conceptualization, Methodology, Investigation, Data curation, Writing – original draft, Visualization. **Peter J.S. Jones:** Conceptualization, Methodology, Writing – review & editing, Supervision. **Paul Ekins:** Conceptualization, Writing – review & editing, Supervision.

Declaration of Competing Interest

The authors declare that they have no known competing interests or personal relationships that could have appeared to influence this research.

Data Availability

The data that has been used is confidential.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.envsci.2023.103560](https://doi.org/10.1016/j.envsci.2023.103560).

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