Leverhulme Centre
for Nature Recovery

Policy briefing:

Securing protection: Integrating governance and security into marine protection

Oxford Marine Protection Project (OMPP) | September 2026

Leverhulme Centre
for Nature Recovery

climate change & (in)security project

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Executive summary

Marine protected areas (MPAs) are increasingly designated in contexts shaped by overlapping food, climate, economic, national, and energy security pressures. Yet current frameworks leave these pressures unaddressed until they generate enforcement failures or political conflict. This brief proposes that security considerations are best integrated into MPA designation from the outset, as a necessary complement to biodiversity science. We propose a four-phase governance-integrated prioritisation methodology, using five spatially operationalisable security lenses: food, climate, territorial, economic, and energy security; alongside full biodiversity assessment. These five lenses were selected because each can be initially operationalised through globally available, remotely-sensed or administratively compiled datasets. Other lenses, including health security and cultural and identity security, are equally spatial and relevant, but require field-based surveys, community-held knowledge, or local tenure records that cannot be assembled at regional scale without local partnership and science.

The brief is accompanied by a multi-layer map visualising overlapping pressures including fishing efforts, cyclone exposure, shipping lanes, territorial disputes, and offshore infrastructure.

The Philippines serves as an illustrative case study, demonstrating how the methodology applies in a jurisdiction where cyclone exposure, fisheries dependence, offshore infrastructure expansion, and contested maritime sovereignty converge. The brief proposes a replicable framework for surfacing security trade-offs before they constrain what designation can achieve.

Section 1: The strategic governance problem

MPAs in a changing strategic context

The establishment of new MPAs is a complex decision involving multiple overlapping considerations. Beyond a singular focus on protecting biodiversity, MPAs increasingly sit at the centre of decisions about how states balance environmental protection with economic activity, national security and sovereignty concerns, long-term resilience, and how communities live and relate to their environment, culture and traditions.

This policy brief identifies how security considerations can be integrated into these decisions. Security is the capacity of marine governance to protect people's access to food, livelihoods, territory, and a stable climate. It is distinct from, though related to, resilience: the capacity of ecosystems and communities to absorb shocks and recover from disruption. Security concerns the governance structures, rights, and enforcement mechanisms that determine whether access is protected in the first place; resilience concerns whether ecosystems and communities can adapt and recover when those structures are stressed or fail. An MPA can strengthen resilience (e.g. a recovered reef buffers storm surge more effectively) while security remains low if communities are displaced from access, or enforcement is absent. Conversely, strong territorial security does not guarantee resilience if the underlying ecosystem is degraded. Both matter to effective MPA governance, and the framework attends to both, but they are not interchangeable.

This brief proposes the use of a governance-integrated prioritisation framework to assist in early-stage MPA planning. This framework treats MPA planning as a strategic allocation problem, which, alongside biodiversity indicators, takes into account five spatial security lenses. Fuller biodiversity assessment, health security and cultural security are also of core relevance but require local knowledge, specialist ecological expertise, or community-held data that the spatial mapping datasets available in this brief are less able to supply. These lenses are ecological and social in character; they are addressed in Section 3 and must be integrated through consultation and fieldwork. No lens is ranked above another; all are complementary inputs into the deliberative process.

Framework: From coverage targets to strategic allocation

In December 2022, the 30x30 target, a global commitment to protect and manage at least 30% of the world's land and sea areas by 2030 to halt biodiversity loss and fight climate change, was adopted under the Kunming-Montreal Global Biodiversity Framework. 30x30 sets a percentage target, but does not specify where protection should go, what it should achieve, or how it should interact with food systems, energy infrastructure, or maritime security. Percentage targets are necessary but not sufficient, and must be complemented by strategic design: a true 30x30 goal is not just about the amount of coverage, but of the significance of that coverage from a systems thinking perspective and how that coverage will be implemented and enforced through time.

Without strategic governance, expanding MPAs will have a smaller payoff for biodiversity or for the communities that depend on the sea. The Philippines illustrates this gap between designation and governance. By 2010, peer-reviewed assessment of nearly 1,000 Philippine MPAs found that just 2.7 to 3.4% of the country's coral reef area was protected in no-take zones, despite the Philippines being a global priority for marine conservation (1). Poor enforcement, inadequate funding, and weak community engagement were identified as the primary causes of this implementation gap, not a shortage of designated areas. A 2025 site-level study of four MPAs in Southeastern Mindanao confirmed the pattern persists: all four MPAs scored well on management assessment tools, yet none reached the threshold for sustained effectiveness (2).

A spatially strategic, multi-objective approach identifies where ecological and security objectives converge and where they conflict. The purpose is not to construct weighted indices, but to surface tensions that can contribute to decision-making MPA designation processes.

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Section 2: MPAs as governance and security infrastructure

MPAs are primarily instruments of ecological protection. They conserve marine biodiversity, restore degraded ecosystems, and safeguard the planetary processes on which all life depends. However, because MPAs regulate human use of defined marine spaces, they are also instruments of spatial governance. MPA designation can distribute security-related risk and opportunity across ecosystems, communities, industries, and states. The central policy question is not only how much ocean is protected, but where protection is placed, what it is designed to achieve, and whether it can be effectively governed after designation: that is, how can protection be secured?

The "human security" approach

In accordance with General Assembly resolution 66/290, a human security approach can assist in identifying and addressing widespread and cross-cutting challenges to the survival, livelihood and dignity of citizens. The approach promotes people-centred, context-specific, comprehensive and prevention-oriented policy. This framework implements that contextualised and people-centred approach by assisting policymakers to view multiple domains of human security – from climate to income – as part of the MPA planning process.

Food security

MPAs support food security through ecosystem recovery and the spillover of fish biomass to adjacent fishing grounds. Well-designed, no-take marine reserves contain fish biomass averaging 670% greater than in adjacent unprotected areas (3). A meta-analysis of 23 fully protected areas found significantly higher fish biomass and abundance near protected area borders, particularly for commercially valuable species (4). A 2024 study of nine large-scale MPAs across the Pacific and Indian Oceans found that catch-per-unit-effort in tuna fisheries increased by 12 to 18% near protected area boundaries (5).

Climate security

The ocean is both key in fighting climate change (absorbing over 90% of excess heat from human-caused greenhouse gas emissions) and highly vulnerable to its consequences. Climate resilience varies across marine ecosystems, and MPA designation needs to consider whether and how to protect highly vulnerable or resilient areas and species. Well-managed marine reserves build the resilience of ecosystems and communities to absorb and recover from acidification, sea-level rise, storm intensification, and decreased ocean productivity; strengthening the security of the people and governance systems that depend on them (6). MPAs targeting blue carbon habitats could achieve 16.2 to 24.8 gigatonnes of CO2-equivalent emissions reductions by 2060 (7).

Territorial security

Territorial security, the capacity of a state to assert and enforce jurisdictional control over defined maritime space, is directly implicated in MPA designation, which is simultaneously a conservation measure and a spatial governance claim. Small island states operationalise their identity as “large ocean states” through MPA designation, reinforcing state control over ocean spaces previously governed only at a distance (8). States have also used MPAs to assert sovereignty over contested maritime space, which sometimes has the potential to amplify rather than resolve regional tensions (9).

The interaction between MPA governance and active security partnerships illustrates what this can look like in practice. In 2023, the United States and Palau signed an expanded bilateral law enforcement agreement allowing US Coast Guard personnel to enforce Palauan fisheries and maritime regulations within Palau’s EEZ, linked to a designated, mapped marine protected area (10). The Philippines faces this dynamic in a more contested form: since 2022, the Philippines has filed over 200 diplomatic protests against Chinese vessels and activities in the South China Sea (11). Clashes between coast guard vessels, fishers and resupply vessels have occurred on multiple occasions (12).

Well-governed MPAs with clear patrol mandates create conditions for enforcement partnerships with allied states. In contested waters, a designated, mapped, and legally defined marine protected area can give enforcement agencies a clearer jurisdictional basis to operate.

Economic security

Economic security, including the stability of livelihoods, industries, and state revenues that depend on marine resources, is directly shaped by MPA designation. A 2024 review documented 48 examples of fishery-related and 31 examples of tourism-related economic benefits from MPAs across 49 countries, finding no evidence of net economic costs to fisheries (13). Designating currently unprotected recreational dive sites as fully protected MPAs could generate an additional USD 2 billion per year in direct tourism revenue globally, with 62% accruing to developing countries (14). Distributional trade-offs exist and should be identified and addressed.

Energy security

MPA designation increasingly intersects with offshore energy infrastructure. Offshore wind farms, oil and gas concessions, subsea cables, and deep-sea mineral exploration licences occupy or border the same marine spaces that conservation planners identify for protection. Offshore wind farms and other marine energy projects are central to low-carbon strategies that support long-term energy security, but they compete for space with MPAs and fisheries (15).

Where MPAs overlap with existing or planned energy assets, designation creates legal and political friction that is rarely resolved after the fact. Marine spatial planning can assist in balance energy development, conservation, and other uses (including equity concerns) (16, 17). Early identification of overlaps allows policymakers to design boundary conditions, zoning arrangements, or sequenced timelines that reduce conflict, or to make a reasoned decision that conservation takes precedence in a given area.

Interactions and trade-offs between security domains

A human security approach also recognises that these domains are interconnected. Improvements in food security generate gains in human security. Climate buffering builds resilience for economic assets, reducing the shocks that undermine long-term economic security territorial governance presence supports enforcement capacity; integrating biodiversity, food security, and climate objectives in MPA planning can be nearly twice as efficient as uncoordinated national-level approaches; and income and food security indicators may be higher in communities near highly protected areas (18). MPAs generally have positive impacts on human wellbeing when designed with community participation (19).

At the same time, poorly designed MPAs create real trade-offs between ecological conditions and the well-being of resource users, and between different user groups (20). Fishing exclusions may impose short-term costs on fishers, as well as unequal impacts on different fishing industries (21). While MPAs can support tourism by improving reef health, tourism may cause direct ecological harm and drive unsustainable fishing. For example: in a Brazilian MPA, tourism demand drives 70% of fish consumption and tourists have less sustainable preferences (22). Conservation claims in contested waters can heighten diplomatic tensions or reinforce territorial objectives (such as in the Chagos Archipelago) (23). Tensions can also play out as a result of competing interests across governing bodies: in Nova Scotia, federal commitments to MPA expansion conflict with provincial-level support for offshore oil and gas expansion (24).

A human security approach also requires paying attention to how risks and opportunities intersect with existing social and political inequalities. Fishing exclusions may impose short-term costs that are distributed unevenly across communities, falling disproportionately on marginalised households. Gender is one of the main sources of existing vulnerability: women in small-scale fisheries are often excluded from the governance decisions that shape their access to resources, and marine closures have been documented as falling disproportionately on areas where women concentrate their harvesting activities (25). Women's post-harvest and processing roles are also often overlooked in impact assessments, reinforcing their marginalisation (26). But gender is not the only relevant dimension: age, disability, ethnicity, Indigenous status, land tenure, and migratory status each shape who bears the costs and who captures the benefits of MPA designation (27). Governance processes should determine which groups face the highest trade-offs when MPAs restrict access, and ensure that consultation and benefit-sharing mechanisms are designed accordingly.

Section 3: A governance-integrated prioritisation approach

In the context of MPA planning as a strategic allocation problem, this section outlines a four-phase methodology that seeks to help identify where protection can be ecologically meaningful, socially legitimate, and governable over time. This methodology sits parallel to law, not above it. How MPAs are actually designated – who must be consulted, what processes must be followed, what rights must be respected – is determined by the domestic legal system of the jurisdiction in question and by applicable international obligations.[1]

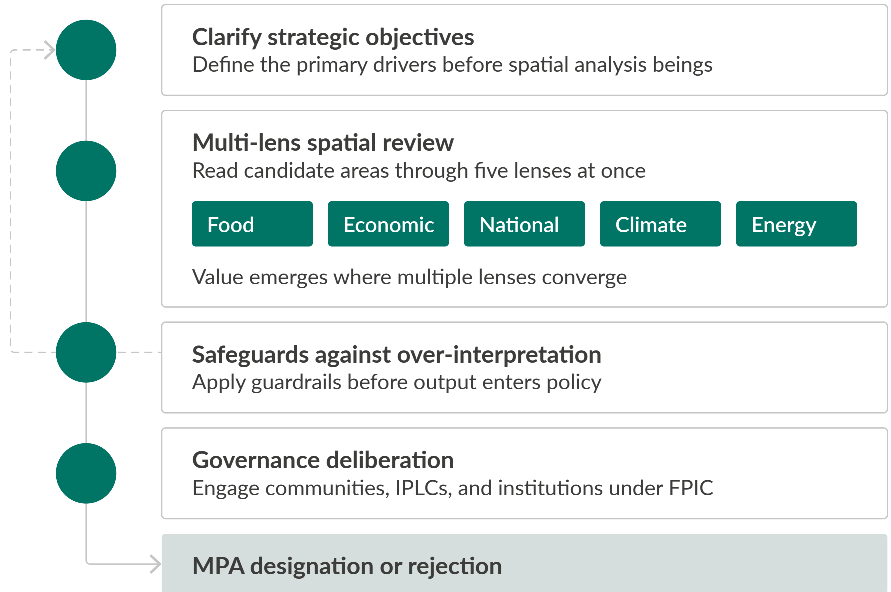

Figure: High-level framework for integrating multiple security issues into marine protection planning

Across all phases, assessments should adopt an intersectional approach to understand the differentiated impacts of MPA designation on various groups within coastal communities. MPA governance and design should recognise that vulnerability to access restrictions, displacement, or loss of livelihood is shaped by a combination of gender, age, ethnicity, Indigenous status, disability, tenure security, and migration history, among other factors (28).

1 Policymakers using this framework must follow those procedures in full. This methodology informs that process. It does not substitute for it.

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Phase 1 — Clarify strategic objectives

Before any spatial analysis, policymakers must define the primary objective of a proposed MPA. This framework does not determine those objectives, but structures how they are interpreted and applied. That distinction matters, because the same spatial data yields different policy implications depending on the lens through which it is read.

Areas of high fishing pressure may indicate overexploitation, livelihood dependence, or enforcement gaps. Areas of ecological significance may simultaneously be sites of active economic use or acute geopolitical sensitivity.

Candidate areas are rarely single-purpose: they sit at the intersection of biodiversity priorities, fisheries dependence, climate exposure, and governance constraints. The relative weight assigned to each dimension depends on the extent to which the MPA process is driven by concerns about biodiversity, climate buffers, territorial governance, or food and economic security. Having objective clarity ensures there is transparency around these weightings, that communities are informed of the purpose of the process from an early stage, and that spatial outputs are not selectively read to support conclusions that are removed from the context.

Phase 2 — Multi-lens spatial review

Once strategic objectives are clear, candidate areas are reviewed through the five complementary security lenses set out above. Each lens asks a distinct analytical question and draws on spatial datasets. These lenses surface the security dimensions that a designation decision will need to reckon with, and flag where those dimensions overlap, conflict, or create trade-offs that deliberation will need to resolve.

The value of this phase lies in the overlay: areas where multiple lenses flag concern simultaneously are the ones that warrant the closest scrutiny in Phase 3, and the most careful deliberation in Phase 4.

Table 1

Lens	Key question(s)	Spatial datasets	Convergence signals	Caveats
Human security	Which communities are most dependent on coastal ecosystems and most exposed to marine environmental change?	WorldPop / GHSL (coastal population density, urbanisation).	Dense coastal populations with high fisheries dependence face compound vulnerability — highest cost of ecological decline and poorly designed MPAs.	Population density measures become a proxy for exposure, not vulnerability.
Food security	Where are fishing communities most dependent, and most exposed to overexploitation or poorly managed closures?	Global Fishing Watch (AIS-derived effort density, SAR vessel detection); FAO Fisheries (catch volumes); Regional Marine Mortality datasets.	High fishing effort near low-protection MPAs: enforcement gap. High dependence + low regulatory strength: communities most at risk from overexploitation and poorly designed closures.	Fishing effort does not confirm overfishing. GFW data may be overinclusive where inactive offshore infrastructure is flagged.

Lens	Key question(s)	Spatial datasets	Convergence signals	Caveats
Climate security	Where is coastal ecosystem integrity most critical to buffering climate risk for adjacent communities?	NOAA IBTrACS (cyclone tracks, frequency, intensity); Global Mangrove Watch; Allen Coral Atlas; Seagrass Watch; Sea Surface Temperature, NASA PACE, Global Ocean Chlorophyll-a, WRI Ocean Watch, Copernicus Marine Service datasets.	Cyclone exposure overlapping blue carbon ecosystems: areas where ecosystem loss carries highest human cost. Mangrove, seagrass, and reef loss amplifies storm surge and food insecurity.	Extreme climate events can compound and exacerbate ecosystem vulnerability. Ecosystem conditions can require field verification.
Territorial security	Where will MPA governance face the most acute jurisdictional and enforcement constraints? Where can military priorities overlap with marine protection?	WDPA (MPA boundaries, designation categories); MPAtlas; UNCLOS-based EEZ limits; nine-dash line and CLCS submissions; GFW (IUU fishing hotspots).	MPAs in or near contested waters face fundamentally different enforcement conditions. Patrol mandates can complement allied maritime security operations (see Palau–US shiprider agreement).	This lens makes security constraints visible, but cannot on its own drive marine protection decisions.
Economic security	Where does MPA designation intersect with existing or planned offshore economic activity?	AIS shipping density (MarineTraffic); Global Energy Monitor (offshore wind); ISA DeepData (seabed exploration contracts); national energy planning documents, WRI Ocean Dependency Framework.	Overlap with energy or shipping infrastructure signals potential legal and political friction. Early identification supports policy design that resolves trade-offs before designation.	ISA data may include exploration zones without active operations. Inactive infrastructure may have become biodiversity habitat.
Energy security	Where does MPA designation intersect with a state's existing or planned energy supply infrastructure and strategic energy interests?	Global Energy Monitor (offshore wind and fossil fuel infrastructure); ISA DeepData (seabed mineral exploration); national energy planning documents; IEA country energy profiles, TeleGeography Submarine Cable Map.	Candidate zones overlapping active or planned energy development — offshore wind, oil and gas concessions, subsea cables, deep-sea mining — signal conservation–energy conflicts requiring early resolution.	Energy planning documents vary in availability and reliability. Planned infrastructure may not proceed. Implications depend heavily on national energy policy context.

The three lenses below are analytically relevant to MPA designation but are presented separately from the primary framework, because of the scope of the brief. Each requires either local and Indigenous knowledge, specialist ecological expertise, or datasets that are specific to each regional scale. They should be integrated and prioritised into any designation process, particularly through community consultation, field-based ecological assessment, and engagement with Indigenous knowledge systems. Their position here reflects the methodological scope, not a hierarchy of importance.

Table 2

Lens	Key question	What it requires	Why it is not in the primary table
Health security	Where is marine environmental degradation most directly affecting community nutrition, disease burden, and physical wellbeing?	Community health data; nutrition surveys; local fisheries catch composition data; coral reef health assessments	Health security at community level requires local health and nutrition data that is currently difficult to locate at the scale or resolution needed for this analysis. Meaningful interpretation also depends on engagement with local health authorities and communities.
Cultural and identity security	Where do marine spaces carry cultural, spiritual, or customary significance that designation would affect — positively or negatively?	Indigenous and local knowledge; ethnographic and anthropological records; customary sea tenure maps; community-held spatial knowledge	This lens is difficult to operationalise through remote sensing or global datasets. It is dependent on community-led knowledge sharing and requires deep local engagement. Applying spatial datasets without that engagement risks misrepresenting or instrumentalising cultural relationships to place. It is addressed substantively in Phase 4.
Biodiversity (full assessment)	What is the ecological condition and species composition of candidate areas, and what conservation value do they hold?	In-situ ecological surveys; benthic habitat assessments; species abundance data; local scientific expertise	Biodiversity assessment at the level of detail required for designation decisions cannot be produced from remote sensing alone. The biodiversity baseline in the primary table describes habitat type and extent, as well as general ranking of endangered species. It does not assess ecological condition or conservation value. That assessment requires field-based marine science and is a condition of any responsible designation process, not an output of this methodology.

Phase 3 — Safeguards against over-interpretation

Before any spatial output from Phase 2 enters a policy conversation, it must pass through interpretive guardrails. This is not a formality, but a core methodological step.

The initial analysis is produced at regional scale, from remotely-sensed and globally-compiled datasets by analysts who are often working outside the communities and ecosystems under examination. Satellite imagery and vessel tracking data reveal broad patterns across ocean space, but cannot reveal what a reef looks like beneath the surface, what a fishing community's relationship to a particular ground has been across generations, or what a designation would mean for the household that depends on it. As a result, unstructured use of remote sensing data can introduce substantial error and uncertainty into risk assessments. Spatial data requires careful integration with field-based knowledge before it can inform management decisions (29).

Every layer in this analysis is an indicator of conditions, not a confirmation of them – for example, high fishing effort does not confirm overfishing; species range overlap does not confirm population health; and a low governance score may reflect data gaps as much as management failure. The shortage of standardised geospatial information on MPA management features means that what appears comprehensive in a multi-layer analysis may obscure significant site-level gaps (30).

MPAs designated without adequate community consultation have been documented as examples of ocean grabbing, the removal of resources and rights from fishing communities who have historically depended on those marine areas. Spatial analysis applied without community grounding can inadvertently enable this outcome (31). As a result, the outputs in this brief are structured prompts for further enquiry, not findings about where MPAs should be established.

Phase 4 — Governance deliberation

Effective MPA designation is not only a technical or ecological exercise, but a governance process grounded in rights, participation, and legitimacy. From site identification through to implementation, policymakers operate within a framework of domestic law and applicable international obligations, which together establish procedural and substantive requirements to safeguard human rights.

At the international level, the baseline is Principle 10 of the Rio Declaration (1992), which enshrines rights to information, participation, and access to justice (32). These principles underpin key frameworks including the Convention on Biological Diversity (CBD) (33), the Kunming–Montreal Global Biodiversity Framework (GBF) (34), UNCLOS Part XII (35), the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) (36), and ILO Convention 169 (37). In some regions, they are further operationalised through binding agreements such as the Escazú Agreement and the Aarhus Convention (38). In practice, this requires that affected communities have timely access to information, can participate meaningfully before and throughout decision-making processes, and have access to remedy where these rights are not upheld. Where Indigenous peoples and local communities are concerned, the applicable international standard is free, prior and informed consent (FPIC), which may be legally required where incorporated into domestic law or binding agreements. Because implementation varies across jurisdictions, policymakers must identify and comply with relevant domestic procedures before initiating any designation process.

What follows is not a designated procedure, but describes the deliberative process that spatial outputs from Phases 1 to 3 feed into: a process that is ultimately governed by law, not by this framework. Within that broader legal process, policymakers will generally move through iterations of the following:

- Initial community consultation, particularly with Indigenous peoples and local communities, alongside other affected stakeholders
- Preliminary scientific review
- Prioritisation or elimination of areas based on combined spatial, scientific, and community inputs
- Targeted data collection for priority areas, including finer-scale biodiversity data and information on community use and dependence
- Integration of additional data into spatial analysis and co-development of MPA proposals, including management measures
- Further consultation and scientific review, including modelling of ecological and socio-economic impacts
- Formal MPA designation
- Ongoing adaptive management, with iterative refinement of rules and enforcement, ideally led or co-led by local communities

These stages are non-linear. They will occur in different orders in different contexts, and many will need to happen more than once. The spatial outputs from this methodology are inputs to the earliest stages – they structure the questions that consultation and scientific review will need to answer. They do not determine the answers.

Photo: Olga Ga on Unsplash

Section 4: Prioritisation and protection typologies

As outlined above, MPA site selection is a multi-stage, iterative process. MPAs are typically prioritised by combining: (1) international and national legal targets, (2) ecological criteria such as representation, connectivity and threat reduction, and (3) socio-economic and political feasibility (39).

This process is conducted differently across jurisdictions. Many existing frameworks recommend that decision-makers first set objectives, then identify candidate sites, apply ecological criteria and finally apply socio-economic filters and political negotiation (40). In practice, however, ecological, socio-economic and political factors often merge into each other, and boundaries are often the outcome of compromise throughout the process (41). This can compromise ultimate efficacy (42). Different jurisdictions also incorporate stakeholder and community participation differently.

For example, the UK Marine Conservation Zone process used stakeholder-led regional projects to design sites balancing biodiversity with fisheries and other uses; however, later political and budget constraints reduced the final list (43). The Philippines has historically used a variety of approaches, from opportunistic (MPAs identified by coastal communities), to donor-assisted (using local knowledge to select MPAs through a national-scale and donor-assisted conservation project) to systematic conservation planning (identifying MPA locations using spatial prioritization software to achieve biodiversity objectives with minimal costs to fishers) with varied success for different stakeholders depending on the process (44). In Finland, MPA expansions have prioritised habitat coherence – however, failures to fully integrate infrastructure considerations may have limited their efficacy (45). In Australia, one study found that existing areas with value for pelagic longlining, demersal trawling, and offshore petroleum extraction were largely avoided by MPAs, irrespective of their biophysical features.

Photo: Olga Ga on Unsplash

The spatial output of this paper can assist in this prioritisation process, by (1) making trade-offs explicit at an early stage in the process and (2) allowing decision-makers to consider from the beginning not only which areas to protect, but what level or type of protection is appropriate in each place. By allowing these balancing processes to begin at an early stage, issues may be avoided further down the line. For example:

- Areas displaying high biodiversity + intense small-scale fishing: prioritised for strict protection or carefully regulated community fishing, in which equity is explicitly evaluated (46).
- Areas which are overfished and have other planned uses (e.g., wind farms, infrastructure): may be prioritised for a limited-take MPA allowing the other use but restricting fishing (47).
- Areas which are key habitats for local communities with marine tenure limits: may be prioritised for zoning ensuring each community retains a sustainable fishing zone near home grounds (48).
- Areas with high biodiversity value and major role as a climate buffer: may be prioritised for no-take MPAs.

Section 5: Case study — The Philippines

The Philippines can help us illustrate the advantages of the security-integrated approach proposed in this brief. It is not presented here as a fully worked case study, but as a concrete example of what the methodology surfaces when applied and why the questions it raises cannot be answered by ecological criteria alone.

- **Climate security**: The Philippines faces the highest cyclone exposure in Asia and the Pacific and ranks seventh on the global Climate Risk Index (49). Between 1995 and 2024, the country endured 371 extreme events, resulting in 27,500 deaths and USD 35 billion in damage (50).
- **Food security**: Small-scale fisheries, which support the livelihoods of over 188,000 families, are acutely vulnerable to climate-related disruption, including coral bleaching, shifting weather patterns, and declining catches (51).
- **Economic security**: Marine fisheries are a major source of foreign exchange and provide a livelihood for up to 2 million fishers and workers (52). Tourism, especially marine and coastal tourism, substantially boosts economic growth by generating billions in revenues, creating large numbers of jobs, and providing major local and national income in the Philippines and the wider Asia-Pacific region (53). In 2019, tourism contributed 12% of GDP and 5.4 million jobs – in the Bohol Marine Triangle, tourism alone accounts for 44% of total net benefits from coastal and marine resources (54).

Evidence shows that previous MPAs in the Philippines have not always resulted in win-win outcomes for fishers, creating negative feedback loops. For example, expectations of high spillover and economic benefits for small-scale fishers may not materialise in the short term (or at all, due to simultaneously increasing pressures from climate change and pollution), leading to dashed expectations (55).

Energy security: At the same time, the Philippines is rapidly expanding offshore energy infrastructure: it is targeting 19–50GW of offshore wind by 2050, has issued four new oil and gas exploration contracts in 2025, and has over 97 port infrastructure projects underway (56). These energy and infrastructure priorities occupy the same marine spaces that conservation planners are targeting for MPA expansion. Without early identification of overlaps, designation decisions will generate friction that is costly and politically difficult to resolve after the fact.

Territorial security: These pressures interact with a contested jurisdictional landscape. Philippine maritime claims are disputed, particularly in the South China Sea, where the Philippines has filed over 200 diplomatic protests since 2022 and Chinese vessels have used water cannons against Philippine fisheries and resupply vessels on multiple documented occasions. Geopolitical tensions and jurisdictional ambiguity complicate enforcement capacity across regions, but they can also provide opportunities for dual-use of patrol vessels for both enforcing territorial integrity and marine protection. Bilateral or multilateral agreements with allied nations can help fill the Philippine navy's enforcement gap through allied patrols of established MPAs. Collaborative management arrangements can extend reach, but sovereignty disputes can simultaneously undermine cooperative enforcement (57).

The Philippines exemplifies the multi-sectoral risks, and opportunities, that MPA expansion now routinely encounters. This risk cannot displace the primacy of environmental protection; it is a condition that effective protection must be designed to navigate. MPA allocation decisions in the Philippines that do not account for maritime boundary disputes, offshore infrastructure, food security needs, and climate exposure will be less enforceable and less durable. The methodology in Section 3 exists precisely to surface these intersections before designation decisions are made.

Applying the Section 3 methodology to the Philippines

The table below illustrates how the four-phase methodology from Section 3 applies to the Philippine context. It does not produce designation recommendations; it shows what each phase surfaces and what questions it generates.

Phase	What the phase surfaces in the Philippines	Key questions for deliberation
Phase 1: Clarify strategic objectives	Overlapping objectives: biodiversity conservation (30x30), food security for coastal communities, climate buffering, national sovereignty reinforcement in contested waters, and offshore energy expansion. No single objective dominates.	Is this MPA primarily biodiversity-driven, fisheries-driven, climate-buffer-driven, or territorial? How should trade-offs between these objectives be weighted when they conflict?
Phase 2: Multi-lens spatial review	Food: high fishing dependence in Visayan Sea, Sibuyan Sea. Climate: cyclone corridors overlapping mangrove and reef systems. National/territorial: contested EEZ, documented IUU incursions. Economic: shipping density, port expansion zones. Energy: offshore wind and oil/gas concession blocks overlapping candidate areas.	Where do multiple lenses flag concern simultaneously? Which overlaps require closest scrutiny before any area enters a policy conversation?
Phase 3: Safeguards against over-interpretation	High fishing effort in AIS data does not confirm overfishing. Cyclone track data does not confirm future risk. Energy concession maps may include areas with no active operations. All layers require local verification before informing designation discussions.	Which outputs require field verification before entering a policy conversation? What local knowledge is needed to interpret each layer responsibly?
Phase 4: Governance deliberation	IPRA 1997 and FARMCs establish Indigenous and community rights over marine areas. Raizal and coastal fishing communities hold customary sea tenure. DENR and DA-BFAR must coordinate designation with LGUs. Geopolitical constraints shape what can be meaningfully enforced in contested areas.	What consultation processes are legally required? Which communities must give FPIC? What enforcement partnerships are available, and what do they depend on? How should contested jurisdiction affect MPA design?

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Section 6: Scope and interpretive boundaries

Analytical scope

This brief is an initial analytical exercise. It does not generate new ecological models, forecast biodiversity risk, or identify specific areas for MPA designation. Such decisions require sustained local fieldwork, marine science expertise, and the integration of Indigenous and local knowledge systems.

The spatial outputs are illustrative and visualise selected data layers to support analytical discussion. Biodiversity indicators – coral reefs, seagrasses, mangroves, IUCN species ranges – are used descriptively to contextualise governance and security dynamics.

Data constraints

The datasets used in this analysis each carry limitations essential to acknowledge. AIS and vessel traffic data (MarineTraffic) captures detected vessel activity but does not measure pollution, ecological damage, or the full extent of illegal, unreported, and unregulated (IUU) fishing – vessels operating without AIS, including many small-scale and illegal actors, are not represented. Global Fishing Watch data reflects fishing effort derived from AIS signals but does not measure overfishing, and may be overinclusive where inactive offshore installations are flagged. Historical cyclone data (NOAA IBTrACS) reflects past exposure rather than future risk, and climate change may significantly alter cyclone frequency, intensity, and trajectories. Habitat and biodiversity datasets – including the Allen Coral Atlas, Seagrass Watch, Global Mangrove Watch, and IUCN species range maps – vary in resolution and coverage; species range maps indicate potential, not confirmed, presence and cannot be used to infer population health or abundance. These datasets are included for methodological illustration; robust interpretation requires integration with local expertise, ecological assessment, and socio-political context.

Risks and future work

This brief recognises the risks of applying external analytical frameworks without grounding in local governance systems, community priorities, and Indigenous knowledge. It does not seek to resolve site-specific governance questions or replace consultative processes.

This project is working in partnership with WWF Philippines and local communities, including ongoing work in the Tañon Strait and Palawan. That grounding informs the analytical choices made throughout. Future work will deepen integration of community-based resource management systems and Indigenous knowledge to move this framework toward operational application.

Further interpretive constraints

The security framing in this brief is a lens for stronger conservation governance, not a justification for designations that serve strategic interests at the expense of ecological integrity or community rights.

This brief contains no gender analysis, and any downstream application must treat gender as a non-negotiable dimension of governance design, consistent with GBF Target 22 and the FAO Voluntary Guidelines for Small-Scale Fisheries. All use of this brief must comply with UNDRIP and the Kunming-Montreal Global Biodiversity Framework, both of which establish free, prior and informed consent as a binding legal obligation.

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Conclusion

MPA designation is better served when security considerations are integrated from the outset, rather than problems to be managed once designation has already happened. Five spatial security lenses are relevant to marine protection: food, climate, territorial, economic, and energy security. Each of these operationalisable through globally available datasets, surface the pressures that determine whether a designated area can be enforced, sustained, and politically legitimate over time. A four-phase methodology should determine how these lenses feed into, without replacing, the legal and consultative processes that govern designation: clarifying objectives, conducting multi-lens spatial review, applying interpretive safeguards, and moving through governance deliberation.

The methodology does not resolve the hardest governance questions. It does not tell policymakers how to choose between a food security priority and an energy security one when they point in different directions, or how to weight ecological integrity against territorial enforcement in contested waters. Those choices belong to the deliberative process, informed by community knowledge, legal obligation, and political judgement that no spatial tool can substitute for. What the methodology can do is make those choices visible earlier – before candidate areas are politically committed to, before community expectations are set, and while the range of options remains open.

The Philippines case illustrates both the value and the limits of this approach. The multi-lens analysis surfaces intersections, such as cyclone corridors overlapping reef systems, offshore wind concessions abutting candidate conservation zones, contested jurisdictions complicating enforcement, that a purely ecological designation process would encounter only later, and at greater cost. It does not resolve them. Resolving them requires the consultation, field science, and legal process that Phases 3 and 4 point toward but cannot deliver on their own.

Two things follow for policymakers working toward 30x30 targets. First, this kind of analysis is most useful when it is initiated early. Second, it is designed to be revisited rather than applied once: marine environments shift, infrastructure plans change, and geopolitical conditions evolve. Any governance process drawing on this work should build in mechanisms for regular revision rather than treating the initial spatial output as settled.

The 30x30 target has accelerated global commitments to expand ocean protection. Whether what gets designated can actually be governed, enforced, funded, and accepted as legitimate by the communities that depend on those spaces, is a harder question, and one that remains open. This brief is one contribution toward asking it earlier in the process, by introducing scopes that surface the challenge of paper MPAs before designation decisions are made.

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Funder acknowledgement

The work of the Leverhulme Centre for Nature Recovery is made possible thanks to the generous support of the Leverhulme Trust.

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