POLICY BRIEF

Big commitments call for bold actions: Upsized MPAs needed for ASEAN region

To achieve global goals and avert a biodiversity crisis, ASEAN needs to harness its connectivities and go large for marine conservation areas

A risky yet ambitious era for global biodiversity

With the adoption of the Kunming-Montreal Global Biodiversity Framework (GBF) in December 2022, the 15th Conference of Parties to the UN Convention of Biological Diversity (CBD) pledged the world's most ambitious conservation commitments yet. Adopted by 95% of the 196 Parties to Convention, the GBF was dubbed as a "historic package of measures deemed critical to addressing the dangerous loss of biodiversity and restoring natural ecosystems" (CBD, 2022).

A key target under the GBF, Target 3, is the conservation of at least 30% of the world's lands and waters by 2030. This "30 x 30" target (30% by 2030) is a considerable step up from the previous CBD global agreement, the Aichi Biodiversity Targets, which aimed to protect or conserve 17% of the world's lands and 10% of the world's waters. Despite some areas of progress, the world as a whole failed to meet the Aichi Targets. The GBF is an effort to rectify the reasons for this failure and catch up on the lost progress.

In ASEAN, the conservation of marine areas is one of the big gaps in the achievement of the Aichi Targets and is one of the biggest challenges of the Kunming-Montreal commitments. By the end of the Aichi Targets implementation period, only 4% of the region's coastal and marine areas had been protected. To meet the new GBF targets and improve the health of coastal and marine ecosystems in the region, the ASEAN Member States (AMS) should work together at establishing larger areas of conserved and protected waters.

This document discusses recent findings showing areas of high marine ecological connectivity in the ASEAN region, which strongly suggests the need to establish cross-boundary partnerships to restore coastal and marine biodiversity and ecological services.

Racing to arrest the continuing marine biodiversity decline

The Southeast Asian region is recognised to host some of the world's most diverse and unique coastal and marine resources. It is home to an estimated 75% of the world's coral species, 33% of reef fish species, 75% of mangrove species (Burke et al., 2022), and 45% of seagrass species (Fortes, 2010). This biodiversity benefits millions of people in the region through services such as fisheries, transport, tourism, and coastal protection.

However, these resource uses also exert pressure on ecosystems. The Reefs at Risk Revisited global analysis in 2011 showed that as much as **95%** of ASEAN's reefs are at risk from integrated local threats (overfishing and destructive fishing, coastal development, watershed-based pollution, and marine-based pollution), with population centres having high to very high levels of risk (Burke et al., 2011). For mangroves, it is estimated that the region has lost a third of its mangrove forests in the last 40 years, mainly due to the conversion of mangrove forests for aquaculture, rice farming, and oil plantation purposes (ASEAN Centre for Biodiversity, 2020).

Photo: Danny Ocampo

There is no uniform system or methodology for assessing the region's coastal and marine ecosystems, but regardless of methodology, various analyses show that ecosystems are in decline and the rich biodiversity they contain may not survive the further threat of climate change.

Will the decline be reversed in time?

The threats are intense, and the damage widespread across various habitats. There are only two types of places where threats to coastal and marine habitats are either low or at least kept to a minimum: 1) **remote and sparsely populated areas** and 2) **marine protected areas**.

The establishment of marine protected areas (MPA) has been done in many sites within ASEAN and elsewhere as an effective coastal and marine conservation strategy. **Individual** MPAs provide safe refuge for important populations of fish and other marine resources, networks of ecologically representative and connected MPAs multiply those benefits as they ensure the protection of a diversity of species throughout their life cycles, and **larger MPAs and MPA networks** deliver these results at an even greater scale than the sum of smaller ones.

The protection of ecologically representative and connected areas is an important aspect of the GBF targets. There are efforts by some individual AMS to establish MPA networks in their waters, and the effectively managed ones are enjoying results. However, small MPAs will not be able to deliver the large-scale conservation results that the world currently needs. AMS will also need to follow the ecological connections of their respective MPAs and establish conservation mechanisms even beyond their national boundaries.

The science for upsizing MPAs across ASEAN

A 2023 analysis facilitated by the ASEAN Centre for Biodiversity (ACB) modelled the movements of fish larval particles around Southeast Asian waters (Hilomen and Peñaflor, 2023). Such larval dispersal studies are important in designing effective MPA networks, as they show trajectories of larval dispersal as water currents carry them after spawning. The distances these larvae are dispersed from their natal habitats depend on their pelagic larval duration. Once development is complete, these marine life actively choose good quality habitats such as coral reefs, seagrass beds, and mangroves. Once settled, the marine species do not stay within a single area but undergo ontogenetic habitat shifts requiring various habitat types during their life cycle

Some of the major findings of the study are the following:

- A large proportion of marine larval propagules released are retained within the source AMS, with still significant amounts of propagules crossing national boundaries and reaching waters of adjacent AMS. This confirms that **there is a need for the continued establishment of MPA networks in these AMS in order to ensure the maintenance, persistence, resilience, and recovery of their reefs and other habitats.**
- There are varying degrees of interactions across AMS waters. Depending on the season (northeast or southeast monsoon), **each AMS (except for land-locked Lao PDR) can either receive larval particles from other states and also serve as sources of larval particles that end up in other AMS**. For instance, during the northeast monsoon season, Cambodia received larval particles carried by the currents from seven AMS, mostly from Viet Nam. Viet Nam, for its part, retained 61% of the particles it released and received 29% from the Philippines as well as 10% from six other AMS. During the southwest monsoon, all AMS dispersed a portion of their particles to other AMS.
- During the northeast monsoon season, there are relatively **strong connections between the following AMS**: Malaysia and Brunei Darussalam, Viet Nam and Cambodia, and Viet Nam and the Philippines. During the southwest season, connections are strong between: Malaysia and Brunei Darussalam (stronger than their northeast monsoon connection), Malaysia and Cambodia, Indonesia, and Singapore.

"The strong retention of particles within each of the AMS means that marine larval propagules produced in each MPA are received by several MPAs within the AMS when dispersed," the study noted. "In the case of an MPA network, the larval propagules produced by constituent MPA are shared within MPAs of the network as well as with other MPAs outside of the network. The entire AMS benefits because with more MPAs, more marine habitats (coral reefs, seagrass beds, and mangroves) will recover over time and more recovered habitats will become available to more recruits. More recruits mean more fish for the people" (Hilomen and Peñaflor, 2023).

These results show patterns of ecological connectivity and are useful inputs for determining priority areas for conservation. While coastal and marine habitats may undergo changes due to climate change and human activities, the direction and location of ocean currents are largely determined by coastal and sea floor features and will likely be unchanged in the long term.

To strengthen the ecological connectivity evidenced by the larval dispersal patterns, the study proposed three possible MPA networks that can be formed in the region (Figure 1).

The study's findings show that if each AMS maintains healthy coastal and marine ecosystems, particularly in these proposed MPA network areas, it can benefit not only the individual AMS but also the neighbouring states. Cross-boundary partnerships in the proposed MPAs will also help make each AMS' coastal and marine habitats healthier, more resilient to stressors, and more capable of dispersing larval particles to other areas.

Further following the information on ecological connectivity also yields other possible partnerships

Science-based conservation design: Proposed marine conservation areas in ASEAN

Based on the patterns of larval dispersal indicating ecological connectivity, three MPA networks are proposed for the ASEAN region.

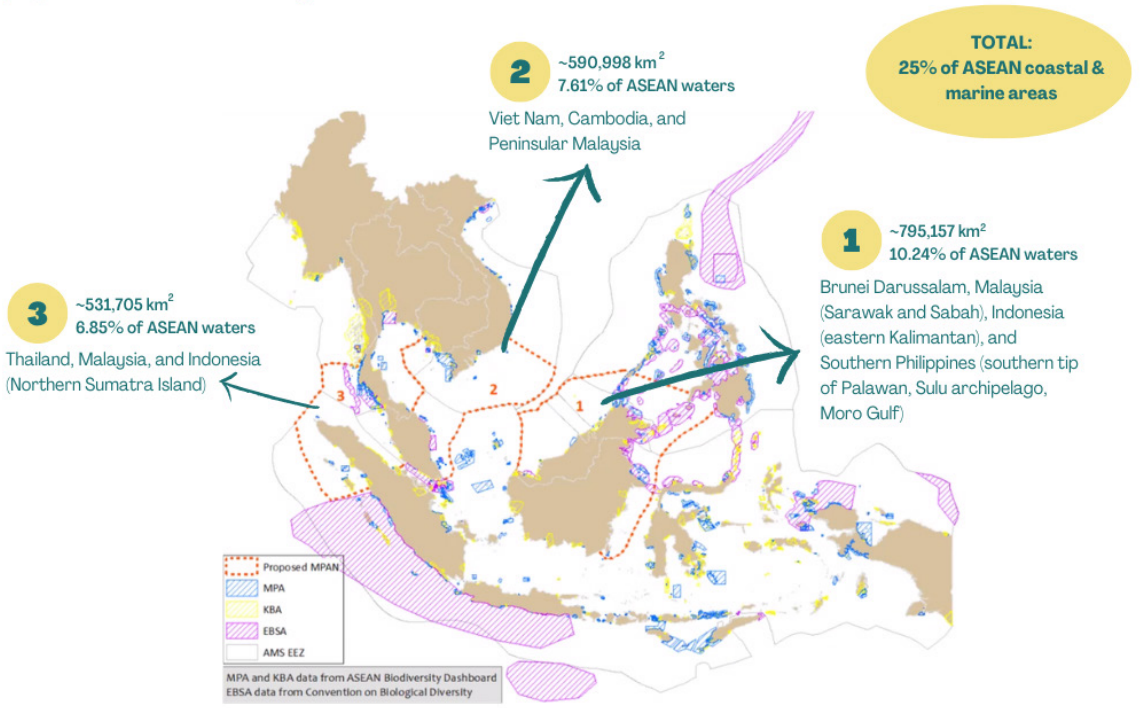

Figure 1

beyond the region. The study recommends that ASEAN also forge marine conservation partnerships with adjacent countries (Table 1).

Proposed MPAN	AMS and other countries involved	Estimated Area (km²)	% of ASEAN coastal and marine areas
1	Brunei Darussalam, China, Indonesia, Malaysia, Philippines, Viet Nam	801,798	10.33
2	Bangladesh, India, Indonesia (Northern Sumatra), Myanmar, Thailand	1,142,493	14.72
3	Australia (Northern Territory), Indonesia (Surabaya, West Timor), Timor Leste	799,687	10.30
	TOTAL	2,743,978	35.35

*estimated total of ASEAN coastal and marine areas: 7,839,937 km²

Creating partnerships to manage large networks of marine protected or conservation areas inside and outside of AMS jurisdictions allow the achievement of multiple types of benefits, such as:

- **Ecological:** improved genetic diversity, more stable species populations, protection of threatened species, enhanced habitats/ecosystems, decline of illegal and destructive fishing activities
- **Economic:** stable fisheries, higher fish biomass, enhanced tourism
- **Social/Cultural:** improved governance, resolution of resource use conflicts, cost effective management through resource sharing, sharing of expertise and lessons, upholding of traditional or indigenous practices/sacred places

Notably, the proposed MPA networks, consisting of 25% (Fig. 1) to 35% (Table 1) of ASEAN's coastal and marine areas, also bring the AMS involved closer to the 30x30 goal under the GBF.

An MPA network is defined as "a collection of individual MPAs or reserves operating collectively and synergistically at various spatial scales, designed to meet objectives based on ecological, social, informational, and administrative considerations that a single reserve cannot achieve alone, while also linking people and institutions involved into a harmonised and holistic initiative to facilitate learning and coordination in planning and administration" (Hilomen and Peñaflor, 2023, as adapted from IUCN-WCPA, 2008).

Do we have what it takes?

The achievement of the GBF targets would require tremendous effort and commitment from governments and stakeholders. Previous examples of similar cross-boundary or multilateral cooperation offer some insights, such as the experiences from the establishment of the Eastern Tropical Pacific Marine Corridor covering waters of Colombia, Costa Rica, Ecuador, and Panama; and Southeast Asia's own Tri-National Sea Turtle Corridor initiative among Indonesia, Malaysia, and the Philippines.

In these areas, large swathes of waters are managed under a collaborative regime that leverages the respective strengths of the countries and stakeholders involved.

However, it must be acknowledged that establishing large MPAs takes considerable time, effort, and resources especially with multiple governments and stakeholders involved. As the world strives to achieve GBF goals by 2030, immediate actions are needed.

For ACB, several avenues can be pursued to help facilitate the process:

- Help provide the scientific underpinning of the initiative by working with scientific institutions and other experts to generate the needed data and analysis on potential MPA/MPA network sites.
- Facilitate negotiation among the AMS and their relevant ministries and stakeholders to discuss possible mechanisms and protocols for establishing and co-managing large MPAs.
- Provide the monitoring platform that will ensure tracking of targets as well as a uniform system for assessing the status of species and ecosystems.

For ASEAN and ASEAN Member States:

- Intensify current efforts to establish MPAs/MPA networks in each and between AMS
- Initiate regional cooperation to establish large marine conservation areas across AMS, based on marine areas with high ecological connectivity:
  - Brunei Darussalam, Indonesia (eastern Kalimantan), Malaysia (Sarawak and Sabah), and the Philippines (southern)
  - Cambodia, Viet Nam, and Malaysia (peninsular)
  - Indonesia (Northern Sumatra), Malaysia, and Thailand
- Support research and biodiversity information management to guide MPA network design, management, and monitoring.
- Generate and allocate sufficient funding to enable the effective management of conservation areas, particularly tapping the Global Biodiversity Fund recently established by COP 15 and other funding facilities that will accelerate implementation of the 30x30 goal in Target 3.
- Mobilise resources to initiate discussions, planning, and implementation of activities to establish MPAs and MPA networks within and between AMS.
- Explore revenue generating mechanisms to sustain the effective management of MPA networks over the long term, such as payments for ecosystem services, private sector involvement, and biodiversity-friendly enterprises.

Consistent with the ambitious targets of the GBF, these decisive and transformative conservation actions are needed to secure more of the region's waters and arrest ongoing biodiversity decline, improve climate resilience, and ensure food security.

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