

# TECHNICAL BRIEF

## Improving the Design and Management Effectiveness of Marine Protected Areas and Networks in the Coral Triangle

A Marine Protected Area is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.— International Union for the Conservation of Nature (IUCN)

### What is the Coral Triangle Initiative?

The governments of Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands and Timor-Leste came together in 2007 to form the Coral Triangle Initiative (CTI) on coral reefs, fisheries and food security. CTI is a multilateral partnership that aims to safeguard the marine and coastal resources of the Coral Triangle—the world’s richest marine ecosystem.

Under the CTI, the Coral Triangle countries adopted a Regional Plan of Action with five goals: 1) strengthening management of seascapes; 2) application of ecosystem approach to fisheries management (EAFM); 3) **developing and strengthening the management of marine protected areas**; 4) implementing climate change adaptation measures; and 5) protecting threatened marine species.

### What is a Marine Protected Area (MPA)?

An MPA is a coastal or offshore marine area where human activities are managed and regulated by authorities to preserve its ecosystem and cultural resources. Well-managed MPAs can conserve biological diversity, protect fish spawning and nursery habitats, protect shorelines, serve as a platform for scientific research and eco-tourism, improve food security, and enhance the quality of life in surrounding communities.

Effective area-based protection, through MPAs, helps maintain ecosystem health and productivity, while safeguarding social and economic development. MPAs also help maintain the full range of genetic variation, essential in securing viable populations of key species, sustaining evolutionary processes and ensuring resilience in the face of natural disturbances and human use. MPAs are often the cornerstone of coastal and marine resource management and essential strategies within the context of integrated coastal and fisheries management.

Within marine spatial plans, which are used to address issues around access and allocation of marine environments, MPAs serve as an important tool in balancing ecosystem protection with multiple use. MPAs are equally a core element of ecosystem-based management (EBM) but are not synonymous with EBM.

### Why are MPAs important for the CTI?

The CTI recognizes that MPAs are effective resource management tools. Under its Regional Plan of Action, the CTI aims to place 20 percent of each major marine and coastal habitat in the Coral Triangle under protected status by 2020. Individual MPAs within and between countries will be scaled up and linked to form a connected, resilient and sustainably financed Coral Triangle MPA System (CTMPAS).

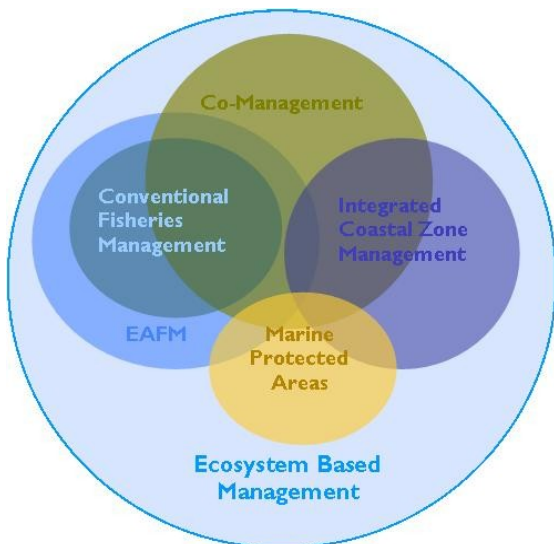


MPAs are comprised of spatial management systems that are planned around the underlying ecosystem and human use patterns in an area. MPAs are employed as tools for fisheries management, controlling human access in ecologically sensitive and productive areas and equally to enhance a destination for tourism purposes. While the overall long term goal of an MPA is to protect, restore and maintain the natural marine environment, the more immediate and commonly associated goals are related to the enhancement of human well-being.

### How do MPAs/Networks differ from other marine management approaches?

There is often confusion among managers about which, of the many marine resource management approaches to achieve sustainable development, they should be using. The primary examples are: co-management, conventional fisheries management, integrated coastal management (ICM), marine protected areas (MPAs), ecosystem-based management (EBM), ecosystem approach to fisheries management (EAFM).

A distinction can be made between these approaches. Multi-sector approaches, such as EBM and ICM, deal with goals for sustainable development in a given region or ecosystem, including all sectors such as fisheries, mining, shipping, and tourism. Sector approaches, such as EAFM, focus on managing one sector, e.g. fisheries, in a way that is consistent with a wider ecosystem well-being focus. MPAs, in line with the principles of EAFM, are likely to be used to address multiple objectives, covering both fisheries management and conservation objectives. MPAs are often considered strategies within ICM, EAFM and EBM. Co-management is an approach used within sector and integrated management regimes. The figure below shows the interface of the different approaches to marine resource and ecosystem management. In aggregate, these strategies, when implemented effectively and in coordination, add up to an ecosystem based management (EBM) regime.

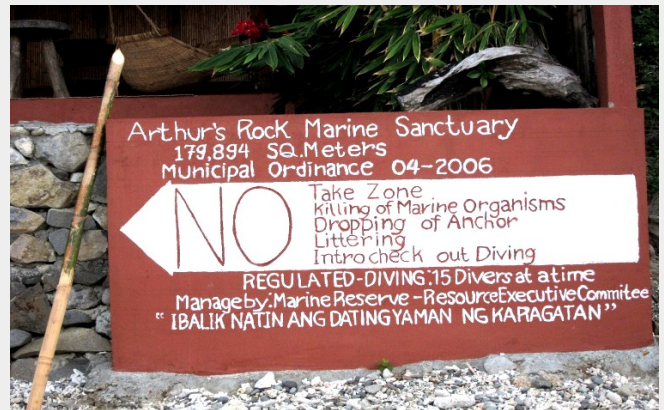


### What constitutes an MPA Network?

MPA networks are defined as (WCPA 2008): “a collection of individual MPAs or reserves operating cooperatively and synergistically, at various spatial scales, and with a range of protection levels that are designed to meet objectives that a single reserve cannot achieve.”

Not just any collection of MPAs constitutes an MPA network. A network can include several MPAs of different sizes, located in critical habitats, containing components of a particular

habitat type or portions of different kinds of important habitats, and interconnected by the movement of animals and plant propagules. They must be appropriately placed, sized and spaced to function collectively as an ecological network and successfully achieve biodiversity goals. Protection of the ecological interconnectedness between and within ecosystems through strategically placed MPAs can strengthen the resilience of the systems to maintain the key functions and processes in the face of stresses. Additionally, a network implies a coordinated system of MPAs, linked through biological levels, as well as administrative levels, reflecting a consistent approach to design, finance, management and monitoring.



Incorporating no-take areas is a foundation in most networks. The proportion of no-take areas contained in the network system depends on the degree of protection, recovery being sought and the level of decline in an area. For some areas, preservation and conservation may be the motivating force for a no-take MPA. And for these areas, no-take areas can be an effective tool for maintaining or enhancing fisheries, especially those that target long-lived demersal species with planktonic larval dispersal and sedentary adults. Social, economic and environmental benefits are generally greater where the no-take area is sufficiently large and well-integrated into broad EBM regimes.

An MPA network is also a network of people managing the components of individual MPAs and promoting the network's viability and longevity. In addition to MPA networks based on ecological considerations, social MPA networks can be formed to facilitate learning and coordination of administration and planning by linking people and institutions involved in MPAs into a coordinate and holistic initiative. In a social MPA network, all agencies, management authorities or communities share the same overall goal and can mature just as ecosystems mature. The social network provides a rationale for individual MPA stakeholders or communities to coordinate with each other to share experiences and to enhance each others efforts in managing their respective MPAs.

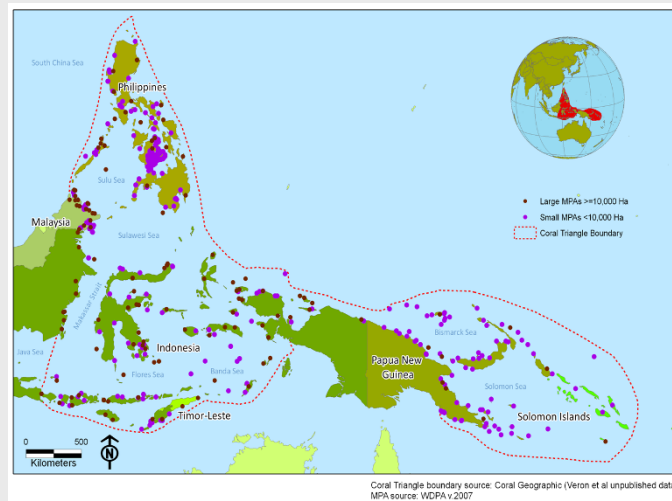
### What is the legal basis for MPAs/Networks in the CTI?

MPAs in the Coral Triangle countries are mandated under legal arrangements that range from national legal frameworks and laws in Indonesia, Malaysia, the Philippines and Timor Leste to local village level traditional law and practices in Papua New Guinea and Solomon Islands. In all countries, the support and participation of local communities and local governments is essential for successful implementation of MPAs, regardless of what is the primary legal mandate supporting MPAs.

## What is the extent of coverage of MPAs and Networks in the Coral Triangle region?

More than 1,500 MPAs are legislated through national or local governments in the Coral Triangle countries. MPAs were first initiated in the 1970s and 1980s in most of the countries with the earliest examples dating back to the 1940s. Indonesia, Malaysia and the Philippines all have strong legislation in place to support the establishment and implementation of MPAs. Timor-Leste has one national marine park whereas Papua New Guinea and the Solomon's Islands do not have national legislation for MPAs but encourage their development at the community level where local communities, in collaboration with the local government, plan and implement locally managed marine areas (LMMAs).

The coverage of MPAs has increased significantly since year 2000 in all six Coral Triangle countries while management effectiveness of MPAs is often lacking. Thus, a high priority activity in all countries is to develop and implement MPA management effectiveness (MPAME) systems to improve the achievement of MPA management objectives. Development of MPAME systems starts with designs of MPAs and MPA networks that will be resilient to change in climate and other impacts on resources. Ultimately, MPAME systems must be integrated into management plans and their implementation.



The Coral Triangle encompasses six million square kilometers of ocean and coastal waters surrounding Indonesia, Malaysia, Philippines, Papua New Guinea, Solomon Islands and Timor-Leste and has more than 1,500 MPAs designated throughout the region.



In the **Philippines** MPAs have blossomed since the 1980s. Presently the country has 28 national MPAs which cover sites with important biodiversity and fisheries resources such Tubbataha National Marine Park in the Sulu Sea. In addition,

the 831 coastal municipalities support more than 1000 smaller MPAs that are mostly implemented through co-management arrangements between local governments and communities. Networks of MPAs are also being formed within and among local governments and communities in Cebu Province, the Bohol Sea, the Verde Island Passage and other areas. The networking of individual MPAs is building efficiencies of scale for enforcement where local governments form a management unit that covers MPAs and areas outside of MPAs where fisheries management is needed. It is being realized that management must operate at multiple political jurisdictions. Thus, "clustering" of several local government units enables them to manage MPAs and fisheries resources at ecosystem (bay, gulf) scales in an integrated manner.

**Indonesia** has established 85 MPAs, 38 of which contain coral reefs as the dominant habitat. Legally designated MPAs cover almost 140,000 km<sup>2</sup>. Most of Indonesia's MPAs are combined terrestrial and marine parks, administered by the Ministry of Forestry. Recently, the Ministry of Marine Affairs and Fisheries took over the administration of marine (sub-tidal) protected areas, particularly National Marine Parks. All MPAs are administered at a national level but managed at a district (regional) level. There are also a growing number of village-level MPAs that are co-managed with the district and national governments. Monitoring of selected MPAs in Indonesia, by NGOs working in collaboration with the government agencies, indicates that a few areas are showing positive impacts on fish stocks and coral reef condition. However, less than 20% of Indonesia's MPAs are functionally meeting their management objectives. Indonesian institutions are beginning to develop a MPA monitoring and management effectiveness system.



In Indonesia, **Papua New Guinea, Philippines and Solomon Islands**, LMMAs are being implemented. An LMMA is an area of near-shore waters and coastal resources that is largely or wholly managed at a local level by the coastal communities, land-owning groups, partner organizations, and/or collaborative government representatives who reside or are based in the immediate area. Internationally, the LMMA Network provides a forum for community organizations and research institutions to share experiences and information about LMMAs and review approaches to Community-based Adaptive Management.



The Wakatobi National Park, for example, in **Indonesia** has diverse coral habitats which are threatened by overfishing and destructive fishing practices. To address

these issues, the park's management plan and zoning system was redesigned to protect coral reef resources by building a resilient network of MPAs that are linked by ocean currents and designed to preserve the area's most important biodiversity. This will also support the livelihoods of local people by replenishing fish stocks and providing new employment opportunities through sustainable tourism. Collaborative management, with a focus on involving communities in management decision-making, is a key strategy in the Wakatobi Marine Protected Area.

## More information on MPAs and MPA networks:

### Organizations:

United States Coral Triangle Initiative (USCTI) [www.uscti.org](http://www.uscti.org)  
World Commission for Protected Areas [www.iucn.org](http://www.iucn.org)  
Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) [www.piscoweb.org](http://www.piscoweb.org)  
The Nature Conservancy (TNC) [www.nature.org](http://www.nature.org)  
Conservation International (CI) [www.conservation.org](http://www.conservation.org)  
World Wildlife Fund (WWF) [www.worldwildlife.org](http://www.worldwildlife.org)  
Coastal Conservation and Education Foundation (CCEF) [www.coast.ph](http://www.coast.ph)  
Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) [www.pemsea.org](http://www.pemsea.org)  
World Fish Center [www.worldfishcenter.org](http://www.worldfishcenter.org)  
World Resources Institute [www.wri.org/reefs](http://www.wri.org/reefs)

### References:

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Burke, L., K. Reyter, M. Spalding and A. Perry. 2011. **Reefs at Risk Revisited**. World Resources Institute, Washington DC.

Christie, P. and A.T. White. 2007. **Best practices for improved governance of coral reef marine protected areas**. *Coral Reefs* 26(4).

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Pomeroy, R.S., J.E. Parks and L.M. Watson. 2004. **How is your MPA doing? A guidebook of natural and social indicators for evaluating marine protected area management effectiveness**. IUCN, Gland, Switzerland, and Cambridge, UK.

TNC, WWF, CI and WCS (Wildlife Conservation Society). 2008. **Marine protected area networks in the Coral Triangle: development and lessons**. TNC, WWF, CI, WCS and the U.S. Agency for International Development, Cebu City, Philippines.

White, A.T., P.M. Aliño and A.T. Meneses. 2006. **Creating and managing marine protected areas in the Philippines**. Fisheries Improved for Sustainable Harvest, Coastal Conservation and Education Foundation, and the University of the Philippines Marine Science Institute, Cebu City, Philippines.

World Bank. 2006. **Scaling up Marine Management: the Role of Marine Protected Areas**. Report no. 36635-GLB. Environment Department/Sustainable Development Network. World Bank, Wash. DC.

### Web-based libraries that contain the above and more:

Coral Triangle Atlas: [www.ctatlas.reefbase.org](http://www.ctatlas.reefbase.org)  
One Ocean Library: [www.oneocean.org](http://www.oneocean.org)  
EBM Tools Network: [www.ebmtools.org](http://www.ebmtools.org)

## What is the US CTI Support Program?

The U.S. Agency for International Development is supporting the Coral Triangle Initiative through the five-year US CTI Support Program (US CTI). The US CTI assists governments and stakeholders in implementing the CTI Regional Plan of Action; supports development of the CTI Secretariat and national coordinating committees; provides access to U.S. science and research capabilities; and shares best practices among the six Coral Triangle countries. The Program is implemented by the Coral Triangle Support Partnership, a consortium of NGOs composed of the World Wildlife Fund, The Nature Conservancy and Conservation International; a Program Integrator; the US State Department; and the National Oceanic and Atmospheric Administration. The program also works with other donors including the Government of Australia and the Asian Development Bank. For more information about the program, visit [www.uscti.org](http://www.uscti.org).

## How is the US CTI Support Program improving MPAs/Networks in the Coral Triangle?

The US CTI Support Program through CTSP is assisting the CTI to establish and effectively manage its MPAs through various activities at the regional, national and site-level in the six countries. At the regional scale, activities include support for development of the CT MPA System, guidance in the development of resilient designs for MPA networks, and building capacity in the formulation and implementation of MPA management effectiveness systems. At the national level, activities focus on training and building capacity for effective planning and implementation of MPAs/networks.

The US CTI Support Program applies an integrated approach across the major CTI thematic areas to achieve catalytic results, focusing activities at specific priority geographic sites and linking them across the region through shared learning networks and regional exchanges to advance regional policies and strengthen capacity throughout the Coral Triangle region.

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