

State of the Coral Triangle Report HIGHLIGHTS

MALAYSIA

Executive Summary

A Comprehensive Action Plan for the Sulu-Sulawesi Sea Marine Ecoregion (SSME) was developed that is consistent with the goals of the Coral Triangle Initiative (CTI). Among others, the Action Plan includes the full application of the ecosystem approach to the management of fisheries and other marine resources. The Action Plan is a response of the member governments to meet the targets not only of the SSME Initiative, but also the CTI and the Millennium Development Goals (MDGs) to improve fisheries stocks by 2015 and improve the socioeconomic condition of coastal communities.

Biophysical attributes

Malaysia is comprised of two distinct regions: Peninsular Malaysia on the southeastern part of the Asian continent; and East Malaysia, which includes Sabah and Sarawak on Borneo Island. The coastline borders seven major seas, viz., Andaman Sea, Malacca Strait, Straits of Singapore, Gulf of Thailand, South China Sea, Sulu Sea, and Sulawesi Sea (Celebes Sea). The total coastline of Malaysia is 4,809 km long (Peninsular Malaysia, 2,031 km; Sabah, 1,743 km; and Sarawak 1,035 km).

Over 60% of the country is still **rainforest** with 8,000 species of flowering plants in Peninsular Malaysia alone. Sabah, the second largest State of Malaysia after Sarawak, faces three main seas: Sulu Sea, Celebes Sea, and South China Sea. Located near the equator, Malaysia is generally warm throughout the year, with temperatures ranging from 21°C–32°C. Annual rainfall is recorded at 2,500 mm, and humidity level is high at 80%.

Coral reefs cover an estimated 4,000 km² of coastal area in Malaysia. Information about the health of coral reefs in Malaysia is somewhat limited. Survey data are fragmented and distributed among numerous institutions. Data reported in the Global Coral Reef Monitoring Network's "Status of Coral Reefs of the World" showed that 38% of the reefs have greater than 50% coral cover in 2004. However, a comparison of data from 1994-2004 revealed a general decline in the reefs previously classified with greater than 50% coral cover.



Mangroves are scattered along the coastline and are very well developed in sheltered estuaries, deltas, lagoons, and coral reef terraces. Mangroves cover 5,750 km², of which 60% are found in Sabah, 23% in Sarawak, and 17% in Peninsular Malaysia. Malaysia has lost approximately 36% of its mangrove forest area and 22% of mangrove forest reserves to unsustainable human uses of mangrove lands and overexploitation of natural resources.

Seagrasses are restricted to sheltered areas in the shallow intertidal zone and associated ecosystems, semi-enclosed lagoons and sub-tidal zones, and between mangrove and coral reef ecosystems. There are currently 18 species of seagrasses recorded in Malaysia. There is a paucity of information on the total area covered by seagrass beds in Malaysia, and a quantitative assessment of their status is not available. However, this ecosystem is highly threatened by sedimentation resulting from coastal development activities.

Malaysia has about 200 gazetted **marine protected areas** (MPAs) under various legislations and departments. These include marine parks, state parks and fisheries protected areas, mangrove reserves, bird sanctuaries, wildlife sanctuaries, and RAMSAR sites. More than half of these MPAs are mangrove reserves.

The government of Malaysia has indicated the importance of economic valuation of

Key Statistics

BIOPHYSICAL

Total land area	329,847 km ²
Total coastline	4,809 km
Total sea area	614,159 km ²
> Internal waters	97,307 km ²
> Territorial waters	63,666 km ²
> Exclusive economic zone	453,186 km ²
Continental shelf area	476,762 km ²
Total coral reef area	4,000 km ²
Total mangrove area	5,750 km ²
Total seagrass area	No data

SOCIO-ECONOMIC

Population (2010)	28.3 million
Mean annual population growth rate (2000-2010)	2.0%
Fish consumption per capita	56 kg
Fisher population (2011)	144,424
Total landed catch (2010)	1,428,881 tons



these ecosystems and the potential monetary gains they may generate through the application of the payment for ecosystem services (PES) mechanism. However, not much research has been done on the economic valuation of corals and coral reef resources, or other marine resources for that matter.

Governance

Both the federal and State governments have jurisdiction over the management and enforcement of laws on the use of marine and coastal resources. State governments have authority over land matters up to three nautical miles seaward, measuring from the low water mark, while the federal government has jurisdiction over the marine estate of up to 200 nautical miles out to the sea.

Several **federal laws** are relevant to marine and coastal resources management and conservation. These include the *Fisheries Act* (1985), *Environment Quality Act* (1974), *National Forestry Act* (1984), *Wildlife Protection Act* (2010), *National Parks Act* (1980), *Malaysian Maritime Enforcement Agency Act* (2004), *Customs Act* (1967), *Exclusive Economic Zone Act* (1984), *Merchant Shipping Ordinance* (1952) and *Merchant Shipping (Oil Pollution) Act* (1994). At the Sabah State level, relevant laws include the *Environment Protection Enactment* (2002), *Forest Enactment* (1968), *Forest (Constitution of Forest Reserves and Amendment) Enactment* (1984), *Parks Enactment* (1984), *Sabah Biodiversity Enactment* (2000), and *Wildlife Conservation Enactment* (1997).

Policies relevant to biodiversity and resources management are also in place. At the federal level, these include the National Biodiversity Policy (1998), National Forestry Policy, National Environment Policy, National Agro-Food Policy, National Physical Plan, National Ecotourism Plan, and National Policy on Climate Change. At Sabah State level, relevant policies include the Sabah Forestry Policy (2005), Sabah Agricultural Policy (1999-2010), and Sabah Environmental Education Policy.

On the international front, Malaysia is party to many **international conventions** and member of several regional fisheries bodies (RFOs). One of the main conventions is the 1982 United Nations Convention on the Law of the Sea (UNCLOS), which was ratified by Malaysia in 1996. Other international conventions ratified by Malaysia include the Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES), 1975; Convention on Biological Diversity (CBD), 1992; United Nations Framework Convention on Climate Change (UNFCCC), 1992; RAMSAR Convention, 1971; and Convention on the Conservation of Migratory Species of Wild Animals (CMS), 1979.

Social and economic importance of marine resources and ecosystems

Malaysia's **general population** was estimated to be 28.3 million in 2010, of whom 74.1% live in Peninsular Malaysia. There are three main ethnic groups, viz., Malays, Chinese, and Indians. The Malays make up the majority of the population at 53.5%, with an additional 11.8% consisting of bumiputras. As of 2003, approximately 98% of the total population resided within 100 km of the coast.

The **fisher population** in the country was estimated at 144,424 in 2011. Local fishers constitute 72% of the total fisher population; the remainder are foreign fishers, mostly from Thailand, Indonesia, and Vietnam. The number of foreign fishers is increasing at a faster rate than the local fishers. Despite various policies and programs introduced by the government, the fishing community remains one of the poorest sectors in the country, majority of whom reside in Sabah, where they comprise 53.4% of the total fisher population.

Total fish catch landing in 2010 was recorded at 1,428,881 tons (t), representing about 70.93% of the total national fish production. The fish landings consist of pelagic fish (37.28%); demersal fish (20.38%); and molluscs, crustaceans, and others (42.34%). The offshore fishery (beyond 30 nautical miles from the coast) is still relatively small compared to the coastal fishery (within 30 nautical miles from the coast). In Sabah, landings are mainly from the coastal fisheries. However, there are increasing efforts by the government to pursue deep sea fishing.

Threats, vulnerabilities, and emerging issues

Coral reefs in Malaysia face many threats. The **major ecological threats** in Peninsular Malaysia are related to agriculture development, resulting in increased sedimentation and nutrient runoff. In East Malaysia, destructive fishing practices, such as cyanide fishing, are prevalent, especially in Sabah, while river sedimentation is the main threat to coral reefs in Sarawak.

Coastal fisheries resources have declined substantially, and the coastal fishing sector suffers from excess fishing capacity. Many have advocated for a more sustainable approach to the management of fisheries resources, such as the implementation of the ecosystem-based management of fisheries (EBMF) to manage fish stocks and their surrounding habitats. Ongoing programs, such as the SSME Initiative, strongly support the implementation of EBMF. Within the CTI program itself, efforts are underway to develop and implement EBMF as a means of ensuring sustainable food supply while, at the same time, preserving and maintaining the marine environment. However, without adequate institutional and legal provisions, programs like these will remain ineffective.

Threatened species in Malaysia include marine turtles, marine mammals (such as the dolphins and dugongs), sea cucumber, and the humphead wrasse. These species are vulnerable in the face of habitat destruction, poor marine water quality due to a variety of pollutants, and inadequate institutional arrangements. Species-specific threats include fisheries by-catch (for marine turtles and marine mammals), direct poaching, and long-term egg harvest (for marine turtles).

Other emerging issues for marine resource management in Malaysia include threats from mariculture activities, increased events of harmful algal blooms, introduction of invasive species through ballast water, ocean acidification and climate change impacts on the marine environment and biophysical characteristics, economic activities, and social well-being. However, more research is needed to evaluate these emerging threats.

Malaysia and its National Plan of Action

Since Malaysia's involvement in the CTI, committees have been set up, and plans and programs have been developed on an ongoing basis. At the 3rd CTI Ministerial Meeting in October 2011, Malaysia was appointed Chair of the CTI Council of Ministers for a two-year term effective November 2011. Some of the main challenges during this period are to (i) ensuring a smooth transition from the CTI Interim Regional Secretariat to a permanent Regional Secretariat to be based in Manado, Indonesia by April 2012; (ii) ensuring implementation of the CTI Activities Roadmap 2012; and (iii) strengthening regional cooperation towards sustainable financing for the CTI.

Malaysia has established its own **CTI National Coordinating Committee (NCC)** chaired by the Ministry of Science, Technology, and Innovation (MOSTI), with the National Oceanography Directorate (NOD) serving as the National Secretariat. The NCC members comprise high-level decision



makers and senior officers from relevant government departments and agencies. The main task of the NCC is to provide guidance and support in the implementation of Malaysia's CTI National Plan of Action (NPOA) and Regional Plan of Action (RPOA). The NCC is supported by three technical Working Groups (TWGs), viz., (i) Coordination Mechanism Working Group (which will be responsible for monitoring and evaluation); (ii) Scientific Working Group; and (iii) Financial Resources Working Group.

Malaysia developed its NPOA based on the RPOA principles, goals, and targets. The NPOA includes programs that are in various stages of implementation and led by several government and nongovernment organizations (NGOs). However, the implementation of these action plans require addressing some gaps such as capacity building for training and skills officers, sustainable financing for longer term programs, and public awareness among decision makers and the general public.

Linking the NPOA-RPOA to sustain ecosystem services, establish sustainable fisheries, and food security

Recognizing lessons learned from past regional cooperation initiatives, such as SSME, the CTI embarked on the expansion of the broader regional context of the six Coral Triangle countries (CT6) to find synergies and meet the challenge of sustaining ecosystem services, fisheries management, and food security. The country's State of the Coral Triangle Report (SCTR) contributes to the initial benchmarks that can help the Monitoring and Evaluation Working Group to track the progress of CTI interventions. The Regional SCTR helps summarize and synthesize the value-adding opportunities and insights that can be derived from cooperation among the CT6.

Coral reefs have great economic values as they harbor potential pharmaceutical products. The tourism industry has benefited from healthy coral reef ecosystems and stands to lose if these sources of revenue are not well maintained. A 2003 report estimated that conservation charges collected from visitors to Malaysia's marine parks amounted to RM1 million and revealed that marine parks attracted 778,482 foreign and 820,116 local tourists. This number could be much higher if the collection of the charges/fees is strictly enforced. The total

use and non-use value of mangroves along Peninsular Malaysia's west coast was estimated at RM5.4 billion, with 46% accounting for use values.

The **dependency of Malaysia on fisheries and other coral reef resources** has increased over time. Total fish consumption was expected to reach 56 kg/capita in 2010, based on annual income growth rate of 1% since 1999, representing an 18% increase over 1999 consumption levels. A resource assessment undertaken by the Department of Fisheries (DOF) itself indicated that demersal stocks had declined from 80-96% since the 1970s.

In 2010, the **marine capture fisheries** (comprised of inshore and deepsea fisheries) produced 1,428,881 tons with a value of RM6.7 billion. Estimates of potential yield for coastal demersal fish, coastal small pelagic fish, neritic tunas, offshore demersal fish, and offshore/deepsea small pelagic resources are available from the Malaysia SCTR and indicate overexploitation of coastal fisheries compared to offshore fisheries. However, offshore fisheries are dominated by foreign fishing vessels. Catches from these foreign fleets are not fully accounted for and probably result in a declining trend in fish catch as well.

At the Regional SCTR Workshop held in April 2012, the participants from Malaysia did not identify any change in the 2002 report "Reefs at Risk" values. However, they cited specific areas of concern for each threat. Reef dependence is highest in Sabah. Coastal development is highest in Kota Kinabalu. Blast fishing is rated highest in Sabah. Marine-based pollution and damage pertain largely to shipping routes from Port Klang to Sabah, while watershed-based pollution is notable in major cities such as Kota Kinabalu and Kuala Lumpur. Agricultural runoff from palm oil also impacts upon coastal systems in Sabah.

Drivers of these pressures in Malaysia are urbanization, tourism and industrial development, conflicting government priorities, overpopulation, demand on high-value fish species (e.g., live reef food fish), lack of public awareness of marine environment issues, garbage dumping, ballast discharge, and greed. Overlapping policies are also slowing down the implementation of laws.

Malaysia is committed to the implementation of its NPOA, as shown by the pledge made by the national government to allocate US\$1million annually for CTI implementation. Following the signing of the Manado Leaders' Declaration during the CTI Leaders' Summit in Manado, Indonesia in 2009, Malaysia has ratified several important policies and legislation that are aimed at the protection of its marine resources, such as the Wildlife Protection Act of 2010 and the National Policy on Climate Change of 2009. Meanwhile, a draft of the Ocean Policy (2010) is presently undergoing consultation. Malaysia is actively involved in the conservation of resources in the SSME and the implementation of the ecosystem approach to fisheries management (EAFM) through the Sulu-Celebes Sustainable Fisheries Management Project.

Priority Research Issues

- ☑ Threats from mariculture activities
- ☑ Triggers and ecological and health impacts of harmful algal blooms
- ☑ Ecosystem impacts of marine pollution in major shipping routes such as that from Port Klang to Sabah and introduction of invasive species through ballast water
- ☑ Ocean acidification and climate change impacts on the marine environment and biophysical parameters, economic activities, and social well-being
- ☑ Impact of land-based activities such as palm oil plantations on coastal ecosystems
- ☑ Coral reef and coastal resources valuation and dependency studies to support future efforts for payments for ecosystem services

Malaysia's responses and implementation of its NPOA directly address two higher-level outcomes of the CTI, namely, sustaining coral reef ecosystem services and sustainable fisheries utilization. However, linking mangroves or seagrass reserves to mainstream marine environmental protection or fisheries sustainability remains a gap. Threats to coral reef ecosystem destruction posed by water quality degradation associated with unsustainable land development on islands adjacent to marine parks is still very much a concern. Malaysia's high dependence on fish imports to augment its fish food needs and supply deficit remains a challenge for the government.

An initial scoping study of PES prospects and potential buyers for a PES program would benefit from the identification and allocation of equitable costs and benefits within the local, national, and CTI-wide governance context. Moreover, laudable efforts made in the SSME provide excellent springboards for enhancing the complementation of efforts of national agencies with regional partner organizations as well as with the CTI Regional Secretariat and working groups.

Availability of Full Reports

This document is to be read as a supplement to the CD version of the complete State of the Coral Triangle Report.

Contact Information

Prof. Nor Aieni Binti Haji Mokhtar

Director/Under Secretary

Malaysia - National Oceanography Data Centre (MyNODC)
Ministry of Science, Technology and Innovation (MOSTI)

Web. <http://www.mynodc.gov.my/>

Email. noraieni@mosti.gov.my