

KEY FINDINGS

BIOLOGICAL ENDOWMENT

Southeast Asia contains nearly 100,000 km² of coral reefs, almost 34 percent of the world total. With over 600 of the almost 800 reef-building coral species, these reefs have the highest levels of marine biodiversity on earth. Southeast Asia is also the global center of biodiversity for coral reef fish, mollusks, and crustaceans. The region contains 51 of the world's 70 mangrove species and 23 of the 50 seagrass species.

ECONOMIC VALUE

The economic value associated with coral reefs in Southeast Asia is substantial. The value of the region's sustainable coral reef fisheries alone is US\$2.4 billion per year. In addition, coral reefs are vital to food security, employment, tourism, pharmaceutical research, and shoreline protection. The coral reefs of Indonesia and the Philippines provide annual economic benefits estimated at US\$1.6 billion and US\$1.1 billion per year, respectively.

THREATS TO REEFS

The heavy reliance on marine resources across Southeast Asia has resulted in the overexploitation and degradation of many coral reefs, particularly those near major population centers. The main threats include overfishing, destructive fishing practices, and sedimentation and pollution from land-based sources. Human activities now threaten an estimated 88 percent of Southeast Asia's coral reefs, jeopardizing their biological and economic value to society. For 50 percent of these reefs, the level of threat is "high" or "very high." Only 12 percent of reefs are at low risk.

The Reefs at Risk project estimates that about 64 percent of the region's reefs are threatened by overfishing, and 56 percent are threatened by destructive fishing techniques. In addition, dredging, landfilling, mining of sand and coral, coastal construction, discharge of sewage and other activities associated with coastal development threaten about 25 percent of the region's coral reefs. Sediment and pollution from deforestation and agricultural activities threaten an estimated 20 percent of the region's reefs.

Over 90 percent of the coral reefs in Cambodia, Singapore, Taiwan, the Philippines, Vietnam, China, and the Spratly

Islands are threatened, and over 85 percent of the reefs of Malaysia and Indonesia are threatened. Indonesia and the Philippines together possess 77 percent of the region's coral reefs and nearly 80 percent of all threatened reefs in the region.

Logging, destructive fishing practices, overfishing, and other activities that are damaging to coral reefs may be lucrative to individuals in the short-term. However, the net economic losses to society from diminished coastal protection, tourism and sustainable fisheries usually outweigh the short-term benefits. Over a 20-year period, current levels of blast fishing, overfishing, and sedimentation could cost Indonesia and the Philippines more than US\$2.6 billion and US\$2.5 billion, respectively.

Global climate change is also a significant threat to coral reefs in Southeast Asia. Elevated sea-surface temperatures have resulted in more severe and more frequent coral bleaching. The 1997–98 El Niño Southern Oscillation (ENSO) event triggered the largest worldwide coral bleaching event ever recorded. In Southeast Asia, an estimated 18 percent of the region's coral reefs were damaged or destroyed.

MANAGEMENT

Effective management is key to maintaining coastal resources, but, is inadequate across much of the region. Some 646 marine protected areas (MPAs) include an estimated 8 percent of the region's coral reefs. Of the 332 MPAs whose management effectiveness could be determined, only 14 percent were rated as effectively managed, 48 percent have partially effective management, and 38 percent have inadequate management.

THE LACK OF INFORMATION

Despite widespread recognition that coral reefs are severely threatened, information about the status and nature of the threats to specific reef areas is limited. This lack of information inhibits effective decisionmaking concerning coastal resources. The Reefs at Risk project was developed to address this deficiency by creating standardized indicators that raise awareness about threats to coral reefs and highlight the linkages between human activity and coral reef condition.