

# Coral Reefs & Sustainable Coastal Development

## Planning for a Sustainable Reef

Excerpted Issue Brief from The Coral Reef Alliance at [www.coral.org](http://www.coral.org)

Almost half a billion people live within 100 kilometers of coral reefs, where they benefit from fisheries, wave and storm surge protection, and tourist income. With the worldwide coastal population expected to double by 2050, coral reefs will be facing increased pressure from unmanaged development along coasts. Unplanned coastal development is not only a serious threat to coral reefs; it also leads to long-term socio-economic loss. By using Integrated Coastal Zone Management (ICZM) practices, policy makers can create sustainable coastal development projects that protect their coral reef resources while meeting other economic needs.

### **Unplanned Development: A Threat to Coral Reefs and Tourism**

Unplanned coastal development projects not only damage coral reefs, but also local economies that are supported by tourism. Coral reefs are a significant driver of coastal tourism, which represents 85 percent of tourism worldwide and fuels a US\$385-billion industry.

### ***Ecological Impacts of Unplanned Coastal Development:***

- Construction projects, such as piers, dikes, channels, and airstrips, kill corals directly. Habitat degradation causes a decrease in fish populations, as fish have fewer places to live and breed.
- Removal of sections of reef can indirectly cause sand erosion, land retreat, and sedimentation.
- Unforeseen impacts of development—such as changed water flows and runoff, chronic sedimentation, sewage effluent, and industrial discharge—impact coral immune systems, growth rates, and reproductive abilities, and can kill corals.

### ***Socioeconomic Impacts of Unplanned Coastal Development:***

- The degradation of coral reef ecosystems results in a less marketable travel destination and the decline of the tourism industry, leading to a loss in revenue.
- The mining of coral for construction materials leads to long-term economic losses.

### **A Solution: Integrated Coastal Zone Management**

ICZM is an approach to develop and implement environmentally, culturally, and economically sustainable uses of the coastal zone. The goal of an ICZM strategy is to coordinate all coastal zone uses and activities, in both public and private sectors, according to an agreed-upon set of resource management policies and practices. Without an integrated approach, it can be difficult to effectively manage development. Governments often regulate development activities through several different laws, regulations, and agencies. There may be one set of regulations for pollution from factories, one for fisheries, and one for coastal

building permits, all administered by different agencies. This sector-by-sector approach focuses solely on one issue or constituency and could result in a loss of valuable resources. For example, if a government establishes a marine reserve, but does not use an ICZM approach to coordinate with other coastal zone activities, the reserve may be undermined by a large private development site that is planned through a different government entity.

The key to successful ICZM implementation involves cooperation among the large number of regulatory agencies that oversee coastal development as well as with private sector stakeholders. This process usually requires strong government commitment to a coordinating mechanism, such as an interministerial council or commission with representatives from all the public and private sectors. Also required are mechanisms that ensure proper implementation, such as the clarification of authorities, an accountable lead agency, and economic incentives (for example, withholding of infrastructure funding until the plan is completed or implemented).

### **Steps for Creating an ICZM Strategy**

The following actions are useful for protecting coral reefs from unmanaged development. A model ICZM approach might incorporate many or all of the following:

- Determine whether traditional principles or resource management measures exist and whether their appropriate implementation could enhance coastal resource management.
- Engage local communities to extract anecdotal and traditional knowledge, to involve local stakeholders in policy planning and implementation, and to create local support for coastal management policies.
- Inventory coastal environments, resources, and programs to learn about, improve the health of, and better manage the coastal environment.
- Determine short-term and long-term goals that call for coastal development consistent with the preservation of the environment, and create a strategy for coastal zone management.
- Create and enforce a strong legal and institutional framework, including economic incentives to reinforce desired behaviors and outcomes.
- Develop a strong coastal management constituency and partnerships at the local, regional, and national levels.
- Establish marine protected areas (MPAs), including no-take reserves, to protect, preserve, and sustainably manage species and ecosystems of special value (this includes threatened species and habitats).
- Perform environmental impact assessments (EIAs) of all development projects in the terrestrial and aquatic sections of the coastal zone.
- Assess and monitor pollutants in the water column and make a plan for pollution control.

The Coral Reef Alliance provides further information resources at <http://www.coralreefalliance.org/resources/briefs/>.