

Integrated Coastal Management

Many coastal management issues cut across sectors — e.g., the aquaculture sector, if not properly zoned, could affect ship navigation routes and tourism sites. The conventional, sectoral management approach, which addresses these challenges separately on a sector-by-sector basis, is typically not sufficient for solving complex problems in coastal areas. Integration and coordination of various coastal and marine management efforts is the major objective of the integrated coastal management (ICM) approach. ICM addresses the governance of human activities affecting the sustainable use of goods and services generated by coastal and marine ecosystems. This approach overcomes the limitations of conventional sectoral management through the following:

- 1. Facilitating better understanding of the uniqueness of the coastal resource system. Through an integrated management approach, ICM reminds the various stakeholders that diverse sectors are involved in ensuring coastal areas' sustainability, since their collective activities affect the overall ecosystem. In contrast, single-sector management often fails to consider the various impacts of multiple uses of coastal resources.
- 2. Integrating ecological, social and economic information. This ensures that management strategies formulated under ICM are responsive to the multiple users and uses of coastal resource systems.
- 3. Promoting interdisciplinary approaches and cooperation among users and beneficiaries to address complex development issues. Through coordination, coastal management efforts by various stakeholders are not duplicated or conflicting, ensuring a more efficient and effective management system.



The Value of Coastal Areas

At the interface of land and sea, interactions between the physical, chemical and biological processes of land, freshwater, saltwater and atmosphere create coastal ecosystems. These areas are home to a rich variety of ecological communities including coral reefs, estuaries, mangroves, seagrass beds and wetlands. These natural ecosystems are closely linked with socioeconomic, human systems to form "resource systems".

Coastal ecosystems provide immense ecological (e.g., spawning grounds for marine life, nutrient cycling); economic (e.g., fisheries, ports, tourism); and cultural (e.g., recreational, educational, spiritual) value and benefits. The economies in East Asia are largely fueled by the goods and services generated by coastal and marine ecosystems, contributing 10 to 20 percent of the GDP of some countries in the region. For instance, in fisheries, 8 of the top 15 fish producing countries in the world are located in East Asia (FAO, 2014). Coastal areas in East Asia are urbanizing rapidly, with corresponding increases in industrial zones, ports and tourist establishments. At present, more than 1 billion people live in the coastal areas of East Asia.

Upstream from the coast, watershed activities such as agriculture and harvesting of timber and minerals contribute to economic growth, but at the same time influence ecosystems in downstream coastal areas.

Coastal Ecosystems Under Threat

Because coastal areas have resource systems that make them attractive to human settlement, these have become major socioeconomic development zones. Human activities in coastal and marine areas in East Asia have diminished the level and quality of goods and services that coastal ecosystems normally generate. Overexploitation of fisheries; degradation and destruction of coral reefs, mangroves, seagrass beds and wetlands; and pollution from land- and seabased human activities are affecting the health and resilience of coastal ecosystems. As a consequence, the value and benefits derived from these ecosystems are being degraded or lost altogether.

To derive more benefit from coastal ecosystems over the long-term, the development and level of use of these resources must be kept within their capacity to sustainably generate goods and services. This requires careful management of human activities that affect coastal ecosystem integrity.

- Over 70% of mangrove cover has disappeared
- More than 11% of coral reefs are collapsed, with another 48% in critical condition
- Over 87% of fish stocks are overexploited or depleted
- The South China Sea alone has over 35 pollution hotspots

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How Is ICM Applied?

ICM is applied through a systematic, procedural and iterative cycle. The ICM cycle includes a set of easily understood processes and supporting tools that allow a stage-by-stage approach to identifying and prioritizing the environmental concerns of stakeholders and to planning, approving, implementing and monitoring policy and management interventions. The six basic stages in the ICM cycle are: (1) Preparation; (2) Initiation; (3) Development; (4) Adoption; (5) Implementation; and (6) Refinement and Consolidation. Each iteration of the cycle involves generation of a new action plan facilitating progress towards sustainable development, based on the experience and foundation established in the previous cycle.

Stakeholders Involved in the ICM Process

- National government
- Local government
- Community-based organizations
- Businesses
- Residents of coastal communities
- Nongovernmental organizations
- Universities and scientific organizations
- International agencies
- Donors



Integrated Coastal Management Cycle for Continuous Improvement

The Benefits of ICM

Over the past 20 years, ICM has been applied in dozens of sites across East Asia, covering more than 31,000 km of coastline and benefitting tens of millions of people living in coastal and watershed areas.

ICM helps local governments to achieve social and economic development targets in a number of areas—pollution reduction and waste management; food security and livelihood management; water use and supply management; habitat protection, restoration and management; and natural and man-made hazard prevention and management. In all cases, success has been achieved through an integrated approach.

Pollution reduction and waste management in Xiamen, China

The Xiamen waterfront has become a model for ecological and economic success. Three cycles of ICM implementation have provided increased access to the beach and seas for leisure and tourism, cleaner lakes and bays for residential real estate, a venue for industries and a home for rich biodiversity. Investment in ICM has generated net benefit of 7 dollars for every dollar invested.

Food security and livelihood management in Chonburi, Thailand

ICM implementation enabled local communities to take a more active role in marine conservation and food security in Chonburi. With the support of local governments, concerned agencies, research institutions and private sector partners, local fishers and communities were engaged and trained in the protection of berried blue swimming crabs. Starting from a demonstration project in Sriracha Municipality in 2006, conservation of berried blue swimming crabs has been applied in seven additional municipalities and shared with various local governments in Thailand as part of coastal strategy implementation. A study conducted by Kasetsart University in Sriracha found a 94% increase in crab catch per sampling from 2011 to 2012 accompanied by a 16% increase in average crab size.

Water use and supply management in Preah Sihanouk, Cambodia

Through its ICM program, Preah Sihanouk rehabilitated a 5-hectare freshwater reservoir with the assistance of local communities and the UNDP GEF Small Grants Programme. Over 5,000 people in the area directly benefited from improved access to potable water for domestic and agricultural use, enhancing their quality of life. The improved availability of water reduced annual expenses for small-scale businesses in the community by an average of 30% of their annual income.

Habitat protection, restoration and management in Batangas, Philippines

Through a province-wide ICM program, 14 coastal municipalities and various stakeholders established a network of marine protected areas to manage and protect fisheries, coral reefs, sea grass beds and mangrove forests. From these collaborative efforts, residents have benefited from increased fish catch and abundance and the return of important fish species. A catch monitoring study conducted by the World Wide Fund for Nature - Philippines (WWF-Philippines) confirmed the presence of larger and economically important fish species like skip jacks.

Natural and man-made hazard prevention and management in Danang, Vietnam

Faced with increasing impacts from floods, typhoons and coastal erosion, Danang focused its ICM program on measures to strengthen the community's resilience to climate change including natural buffers against storm surges; improved forecasting, early warning, response and recovery systems; and the construction of multipurpose shelters and model houses designed to withstand typhoon damage. Over 6,500 meters of dike system were strengthened as a barrier against saltwater intrusion from sea level rise, saving more than 400 hectares of agricultural land and doubling its productivity.



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