

## LINKING RIVERS TO MARINE ECOSYSTEMS

Coastal settlements often depend on upstream river basins to sustain their economies by providing clean water supplies, environmental services related to storm and flood protection, livelihoods for the poor, and food security. Unfortunately, these coastal ecosystems are at risk on every continent, with land-based pollution sources causing over 80 percent of the global pollution of marine water. The problem is that many countries have difficulties in linking the effects of upstream freshwater and river basin management to coastal ecosystems. This connection is critical so that excessive pollution, flow alterations, such as dams, and water diversions for irrigation do not create cumulative damage to coastal waters upon which the economies of coastal settlements depend.

The GEF's work emphasizes the important relationship between river basins and marine ecosystems, recognizing the problems caused by the flow of pollutants from land to water. The impact of GEF assistance in linking watersheds with seas has ranged from on-the-ground pollution reduction to adoption of policies and institutional reforms. Through GEF's *Strategic Action Program to Address Pollution from Land-based Activities in the Mediterranean Region*, for example, 20 nations in the area made commitments to reduce pollution and adopt clean technologies, and put specific milestones in place to ensure enforcement.

### PROMOTING POLICY REFORM

With GEF assistance, the government of the Philippines has developed the Manila Bay Declaration and Manila Bay Coastal Strategy. These initia-



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tives are multi-jurisdictional in nature, involving the national government, provinces in the drainage area, and large municipalities. They represent the national equivalent of strategic action programs enacted in the framework of coastal sustainable development. The political declarations have been adopted at the highest levels and represent decade-long commitments to on-the-ground action that will result in millions of dollars of investments and policy reforms to reduce degradation.

In the Mekong Basin, the GEF-funded *Water Utilization Project* has supported the Mekong River Commission (MRC) and basin countries in establishing regional and national water use regulations. These regulations can provide downstream flows needed to nurture sensitive ecosystems, water

supplies, and irrigation projects as well as water quality guidelines for the basin. In 2003, the MRC adopted two sets of agreements for sustaining the basin's water resources. The new agreements define uses of basin waters, including tributaries, confirm a basinwide approach for the legal framework of the MRC, and provide a legal basis for a water use monitoring system.

Focusing on the Sao Francisco Basin, the Government of Brazil is using GEF finance to help operationalize its new water law, which establishes a system of water pricing, allocates water rights, and requires development of water charges and use regulations in the basin. The five basin states have formed a basin committee for integrated management under the law, and conflicting uses are being balanced to restore and sustain the downstream coastal resources.

## **REDUCING POLLUTION**

Pollution and flow reduction from the Hai River Basin affect the Bohai Sea in China. In response to the Bohai Sea Declaration, reforms and investments are being undertaken in the largest tributary, the Hai Basin. GEF funding has provided incentives for private sector management of sewage treatment for cities not receiving direct loans for sewage treatment. In addition, treated sewage is being reused in agriculture in the basin as a way to reduce the overpumping of groundwater for irrigation that depletes river flows and divert polluting nutrients from the sea. The approach centers around the adoption of integrated management in the basin by ministries and different levels of government. These interventions are precedent-setting for areas under water stress from pollution and wasteful irrigation.

## **FOR MORE INFORMATION**

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