The Problem

Climate change is happening now and nature is experiencing its impacts first. Whether one looks at coral reefs, mangroves, arctic areas or montane regions, climate change poses a complex and bewildering array of problems for ecosystems. The key question is, what can be done—in addition to the rapid reduction of CO₂ emissions—to increase the resilience of ecosystems to climate change?

WWF Response

WWF is working with natural resource managers and other stakeholders to integrate climate change adaptation strategies into their management philosophies and plans. Conservation of ecosystems and natural resources requires that we develop adaptive management strategies or accept that many natural systems will be lost to climate change.

Project to Build Coastal Resilience

WWF is testing its approach to build resilience with Global Environment Facility (GEF) and partner co-financing in tropical mangrove areas of high biodiversity importance.

Mangroves live in estuaries at the interface of marine, terrestrial, and freshwater ecosystems, and are predicted to experience among the most dire consequences of climate change. They act as buffers between systems, which makes them hugely important for biodiversity and human communities. Mangroves are also indicators of the health of each system and of their interconnections. They act as nurseries for fish and invertebrate species that later live on coral reefs and in the pelagic zone, and they control aspects of water chemistry in estuaries and coastal zones. They can also serve as a buffer against storm surges and rising tides associated with climate change. Sadly, mangroves are among the most damaged and degraded of all ecosystems. Climate change is anticipated to make conditions even worse, adding a level of urgency to the need to take action to better protect them.

This project aims to build the capacity of natural resource managers to assess vulnerability and to adapt management strategies to respond to expected climate change impacts. Vulnerability assessments will be conducted in each focal area and this information will be used to craft adaptation responses.

Initial vulnerability assessments and adaptation planning point to the need for mangrove protection, reforestation with "climate-smart species", integrated land-use and marine planning, as well as activities to improve resource use technology. Coordinating the testing of adaptation methods in geographically diverse locations within a common habitat type aims to increase the replicability so that the project results can be transferred to other conservation efforts around the globe.
Project Focal Areas

Four countries from Africa and the Asia/Pacific region will participate: Cameroon, Fiji, India, and Tanzania. In each country work will be carried out with diverse groups of government, academic, non-profit, and community representatives.

Rio del Rey Estuary, Cameroon

The Gulf of Guinea contains Africa’s most extensive mangroves, which help to stabilize a large part of the West African shoreline. The area is under high stress from urbanization, industrialization, and agriculture, and is experiencing impacts from timber and petroleum exploitation around the Gulf coast. The project will focus activities within the vicinity of the proposed Ndogore National Park in the Rio del Rey estuary, where the heart of Cameroon’s mangroves are found.

Sunderbans Delta, India

Sea level in the Sunderbans mangroves has risen at an average rate of 3.14 cm a year over the past two decades, much higher than the global average of 2 mm a year. Currently more than 4 million people inhabit the Indian Sunderbans and are dependent on the region’s natural resources. Mangroves in the region are the most damaged and degraded of all natural systems, yet they are crucial for the ecological integrity and services of the region. Project activities will take place on two island villages, Bali and Choto Mollakhali.

Mafia Island and Kilwa District, Tanzania

The East African Mangroves are considered among the most threatened habitats in the world, with charcoal and timber industries, urban growth pressures, and mounting pollution problems confounding climate change impacts. Intensive shrimp farming and abundant coral reefs in the area present an opportunity to integrate marine and terrestrial assessments and resource management adaptation strategies. Project activities will take place on Mafia Island, and in Kilwa District along the mainland coast.

Fijian Islands

Fiji has the third largest mangrove area in the Pacific Island region. Climatic variation across the larger islands in Fiji influences mangrove distribution and ecology, and different locations are expected to experience distinct effects of climate change. Project activities will take place across sites in five areas, including Verata, Votua, Viti Levu, Vanua Levu, and Yaqara.

Project Timeline

2002 – 2003: Development of concept, identification of focal project areas
2004 (1st quarter): Stakeholder consultation workshops, project partners and sites further identified
2004 (2nd – 4th quarter): Medium-sized Project Brief for GEF funding submitted
2005 (3rd quarter): Project approved for funding by GEF council
2005 (4th quarter): Project kickoff meeting in Tanzania to refine methodology for generalizable vulnerability assessment and adaptation planning
2006 (1st – 3rd quarters): Vulnerability assessment carried out, stakeholder workshops convened and adaptation plans finalized
2006 - 2007: Adaptation field trials and ongoing monitoring by communities and other project stakeholders
2008: Field trials and regional adaptation strategies compared and contrasted to further develop generalizable methodology; Results published and communicated broadly

For More Information

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