

SHORELINE STABILISATION & STORM PROTECTION

HURRICANES, CYCLONES, STORM SURGES AND OTHER COASTAL WEATHER DISTURBANCES can cause immense damage through flooding and direct destruction of property, not to mention the loss of human life. In Bangladesh 40,000 people were drowned in 1985 during one storm surge. Globally, an estimated 46 million people per year are currently at risk from storm surges.

Saltmarshes, mangroves and other forested wetlands act as the frontline defence against incoming storms. They help minimise the impact of storms by reducing wind action, wave action and currents, while the roots of the plants help to hold the sediment in place. Mangroves in the Sundarbans break up storm waves that exceed 4 metres in height, and this has encouraged the Government of Bangladesh to invest considerable sums of money in re-planting mangroves in the area to assist in storm protection. Following many years of mangrove loss and conversion in the Philippines, the Government passed a law in 1986 requiring the extension of a mangrove forest belt along shorelines in areas prone to storm surges or typhoons from a 20 metre width (set by a

law in 1975) to a 50-100 metre width. Government sponsored reforestation of mangroves in the Philippines began in the 1980s with a World Bank funded US\$ 3.5 million project. Reforestation is a costly process: in Thailand replanting costs amounted to US\$ 946 per hectare compared to only US\$ 189 per hectare for protecting existing mangroves.

The value of intact mangrove swamps in Malaysia for storm protection and flood control alone has been estimated at US\$ 300,000 per kilometre – the cost of replacing them with rock walls. Shoreline stabilisation is equally important in inland rivers. In the United Kingdom, the loss of vegetation along river banks in eastern

In Brief

- ✓ Coastal wetlands play a critical role in many parts of the world in protecting the land from storm surges and other weather events; they reduce wind, wave and current action, and coastal vegetation helps to hold sediment in place.
- ◆ The value of intact mangrove swamps in Malaysia for storm protection and flood control alone has been valued at US\$ 300,000 per kilometre – the cost of replacing them with rock walls.
- ◆ Loss of vegetation along river banks in eastern England was costed at US\$ 425 per metre of bank – the cost of maintaining artificial bank reinforcement to prevent erosion.
- ◆ The value of 1 kilometre of coral reef ranged from US\$ 137,000 to almost US\$ 1.2 million over a 25-year period, based on the economic value of storm protection, fishing and tourism.

SHORELINE STABILISATION & STORM PROTECTION...



Mangroves, saltmarshes and other forested wetlands often act as the frontline defence against incoming storms.

Photo: WWF-Canon/Siegfried Voldhek

England was costed at US\$ 425 per metre of bank – the cost of maintaining artificial bank reinforcement to prevent erosion.

Coral reefs also deliver storm protection. A recent estimate of the value of coral reefs found that the cost of destroying just 1 kilometre of reef ranged from US\$ 137,000 to almost US\$ 1.2 million over a 25-year period, based on the economic value of storm protection, fishing and tourism. Despite their crucial role, an estimated one third of the world's 600,000 square kilometres of coral reefs have already been destroyed. A recent survey indicates that 58% of the remaining reefs are at risk from human activities, with overfishing and destructive fishing practices, as well as coastal development and bleaching associated with climate change, identified as the major culprits.

Predicted effects of climate change over the next 50-100 years will place both coastal and inland wetlands in some parts of the world under a great deal of pressure through increased prevalence of tropical storms, changing patterns of precipitation, and sea level rise. ◆



CONVENTION ON WETLANDS
CONVENTION SUR LES ZONES HUMIDES
CONVENCIÓN SOBRE LOS HUMEDALES
(Ramsar, Iran, 1971)

Wetland Values and Functions

The Ramsar Bureau
Rue Mauverney 28
CH-1196 Gland
Switzerland

Tel.: +41 22 999 0170

Fax.: +41 22 999 0169

e-mail: ramsar@ramsar.org

Web site: <http://ramsar.org>