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Sustainable coastal erosion protection and adaptation to climate change in the Mekong Delta, Vietnam

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Abstract
Most of the dynamic coastline of Soc Trang Province in the Mekong Delta of Vietnam is protected from erosion, storms and flooding by a narrow belt of mangroves. However, development and the unsustainable use of natural resources in the coastal zone are threatening the protection function of this forest belt. This is exacerbated by the impacts of climate change, particularly the increased intensity and frequency of storms and floods, and by rising sea levels. In sites where severe erosion has destroyed the mangrove belt, coastal protection and climate change adaptation through mangrove rehabilitation is only possible after the wave energy has been reduced by physical barriers. Different arrangements, placements and designs of erosion protection measures were investigated using numerical modelling which simulates hydrodynamics and shoreline development and physical modelling. Breakwaters made out of two parallel rows of bamboo filled with brushwood bundles yielded the best results. Bamboo breakwaters have additional advantages due to the strength, availability of the material and low costs. T-shaped bamboo fences which connect existing headlands were tested in one area of the coast of Soc Trang. In addition, a breakwater was built in such a way that downdrift erosion can be avoided as far as possible. A comprehensive monitoring programme was established and results confirm the effectiveness of bamboo breakwaters for erosion protection and sedimentation. A detailed documentation of the construction and the monitoring programme provides the basis for the expansion of erosion protection and mangrove rehabilitation in erosionsites in the Mekong Delta of Vietnam.

Biography

Klaus Schmitt is Chief Technical Advisor of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) project 'Management of Natural Resources in the Coastal Zone of Soc Trang Province, Vietnam'. He holds a Ph.D. in vegetation ecology and an M.Sc. in forestry. He has been working for more than 27 years in research and development cooperation projects for IUCN, WWF, World Bank and GIZ in Kenya, Ghana, Nigeria, Uganda, Cambodia and Vietnam. The focus of his work has been on integrated natural resource management, nature conservation, protected area planning and management, biodiversity conservation, coastal management and climate change adaptation.