

PLANTING MANGROVES IN HIGH EROSION AREAS

BACKGROUND

Kien Giang Province has 205km of coastline and it is estimated that at least 25% of this coastline is badly eroded. This shoreline has more than 5,000 ha of mangrove forests, forming a thin green line of salt-tolerant vegetation that uniquely buffers and protects valuable farming lands from rising seas and storm damage. This tacit coastal defense is threatened by global climate change, as predicted rises in sea levels take effect.

In the wet season SW winds blow from the sea towards the land and this pushes waves towards the dykes which cause general erosion and breaches of the dykes. In this season silt is deposited along the coastline. In the dry season the NW winds blow from the land towards the sea. At this time some of the silt deposited along the coastline moves out to sea.



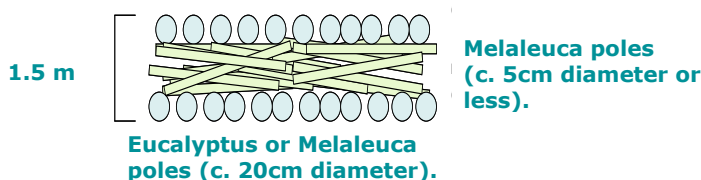
It is difficult to establish mangroves in areas of high erosion. 50% of plantings along the coast line have failed.

Reasons for these failures are poor species selection, poor quality seedlings and a lack of protection of seedlings from mechanical forces during the critical initial stages of growth following planting.

The project has developed a series of measures to protect the seedlings and increase the likelihood of successful mangrove replanting.

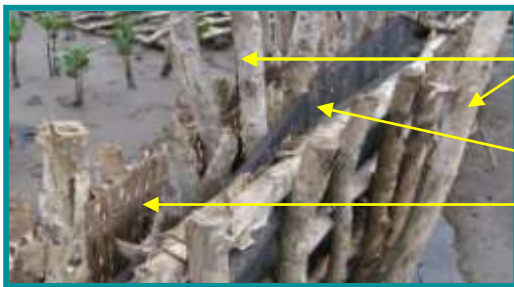
PROTECTION METHODS

WAVE BARRIER FENCE: In Kien Giang the foreshore is shallow and the waves are not high or strong, nonetheless they are causing high rates of erosion with up to 25m being eroded annually from some areas. One major impediment to the successful establishment of mangroves is wave action. In order to reduce this a wave barrier fence has been developed. The design is shown below.



The main function of the wave barrier fence is to reduce wave action. The design also traps some silt at the end of the wet season and excludes rubbish from the foreshore.

SILT TRAP FENCE: Another impediment to successful establishment of mangroves is the change in silt deposition with seasons. The silt can smother mangroves in the wet season and will be eroded from small root systems of seedlings during the dry season. The design of the silt trap fence is shown below.



Frame of Melaleuca poles.
Shade cloth filters sediment.
Woven bamboo mat reduces wave action, traps sediment.

The main function of the silt trap fence is to keep or trap silt deposited in the wet season and from being washed into the sea during the dry.

This fence also reduces wave energy, and excludes rubbish from the foreshore.

Fence Type	Estimated Cost per km of Fence (VND)
Wave Break	265,500,000
Silt Trap	150,000,000



SILT TRAP FRAMES: A third strategy is to place melaleuca frames on the surface of the mud. The frames help to trap sediments and protect mangrove seedlings.

PRODUCTION OF MANGROVE SEEDLINGS:



Mangrove seeds are best planted directly into the planting site. Seeds use their stored energy reserves in early growth and will slow down as they adjust to new conditions if transplanted. For logistical reasons it is often necessary to grow seedlings in nurseries. Seeds or seedlings are planted in 15cm diameter plastic bags filled with mud and silt from the intertidal zone and placed in a screen house with approximately 50% shade provided by shade cloth or fish net. In the nursery they need to be watered twice daily with salt water and need exposure to direct sunlight before planting. They are ready to transplant after about 2 months.

A wide, dense forest of healthy mangroves along the shoreline will help break the erosive force of waves and storms and help build resilience to climate change. Kien Giang Province can report some success at planting in high erosion areas.

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