Post-tsunami events in Malaysia: intensified R&D in mangrove establishment for coastal protection

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Outline of presentation

- The scenario of mangrove in P. Malaysia
- The extent of damage by December 2004 tsunami in Peninsular Malaysia and lesson learned;
- Post-tsunami action plans;
- Challenges in R&D in establishing mangroves for coastal protection; and
- Conclusion

Scenario of mangroves in P. Malaysia: accreting shoreline by mangrove species

Scenario of mangroves in P. Malaysia: eroding shoreline & big trees are being washed away

Another scenario: extensive mudflat but without mangrove vegetation

Planting of mangroves in exposed tidal mudflat

Seedlings survive better if they are protected

Trees directly exposed to tidal waves

Abrasive action of tidal waves

Most of the planting activities done in sheltered mangroves for production purposes

The tsunami hit: December 2004 tsunami

Post-tsunami action plans

- The government allocated funding for mangrove rehabilitation;
- Existing mangroves will be protected;
- National Committee, assisted by two technical committees (Planning & Implementation Committee and Research & Development Committee) were formed

Technical Committee on Planning & Implementation

- To identify suitable areas for planting mangroves with the main objective is to increase the acreage under mangrove
- To raise enough planting materials
- To carry out planting

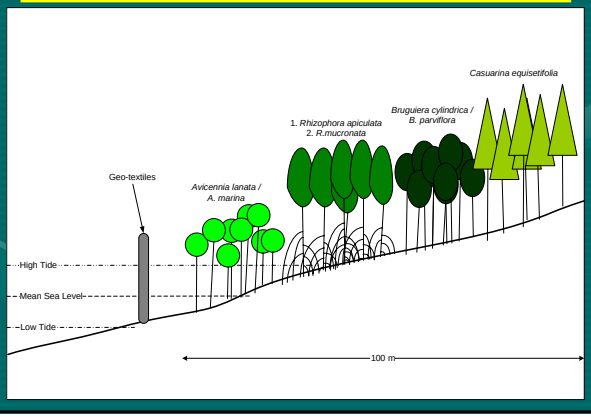
Technical committee on R&D

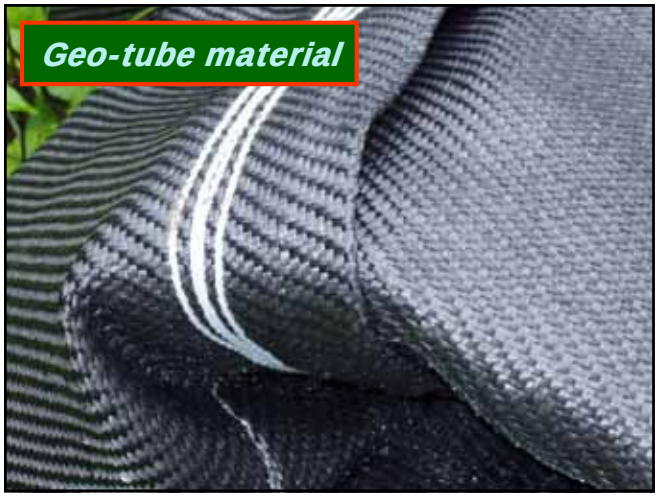
- To conduct R&D on planting mangroves for protective purposes (Bio-shield) in coastal areas exposed to tidal actions;
- Strategy used is a combination of hard & soft structure;
- The model established that can be replicated in other areas

Challenges of R&D

- To plant mangrove that will act as a buffer zone to protect coastal lines against tidal waves;
- The small seedlings of mangroves need to be protected before they can grow and establish on the mudflat; and
- A planting technique in liquid mudflat needs to be modified/improved
- Insect & diseases

Planting techniques





Geo-tube

Alternative measure to protect coastal line

Interlocking concrete slabs

Wooden wall & pole

PLANTING OF MANGROVES BEHIND A BARRICADE OF DISUSED TYRES

INSTALLATION OF WAVE BREAKERS, 1999

Faschines

Coir rolls

Trapped beach materials

Eco-bags

PREPARATION OF VEGETATED COIR ROLL, 1999

1 year

1 m tall seedlings

RESULTS: PLOT IA – Opposite site office & laboratory

2000

March 2004

Conclusion

- To establish a successful model of hard and soft structure (bio-shield) in reducing impacts of tidal waves

THANK YOU