Mangrove-based interventions for coastal protection in Viet Nam: Sharing lessons and experiences

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Photo: Xuan Thuy NP

FFPRI REDD-plus and F-DRR Research and Development Center Japan

International Seminar: Protecting Coastal Areas with Forests: Toward the Development of Disaster Prevention and Mitigation Technology

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VIỆN KHOA HỌC LÂM NGHIỆP VIỆT NAM VAFS

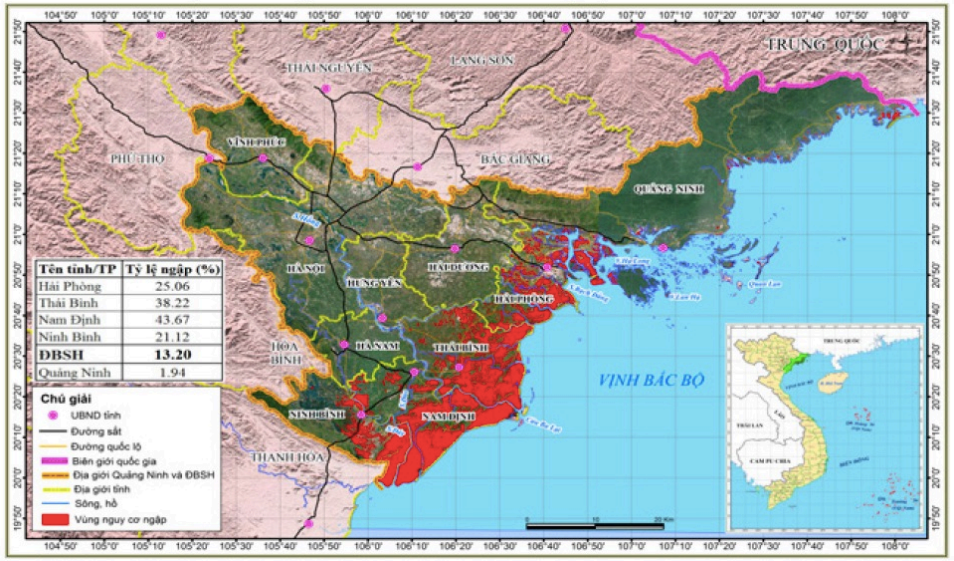
Outline

- An overview of the context in Viet Nam
  (Natural risks and damages in the coastal area, mangrove distribution)
- Mangrove-based interventions
  (Specific models or initiatives)
- Sharing lessons learned & experiences

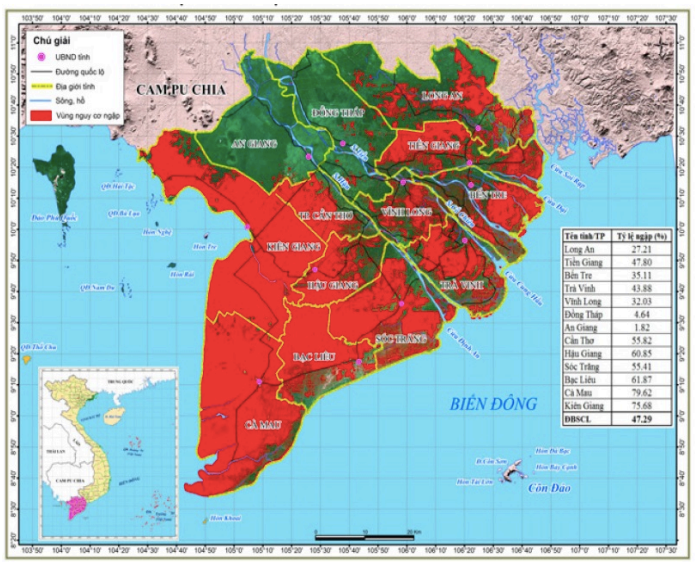
Natural risks & damages at the coastal area

Flooding by sea level rise

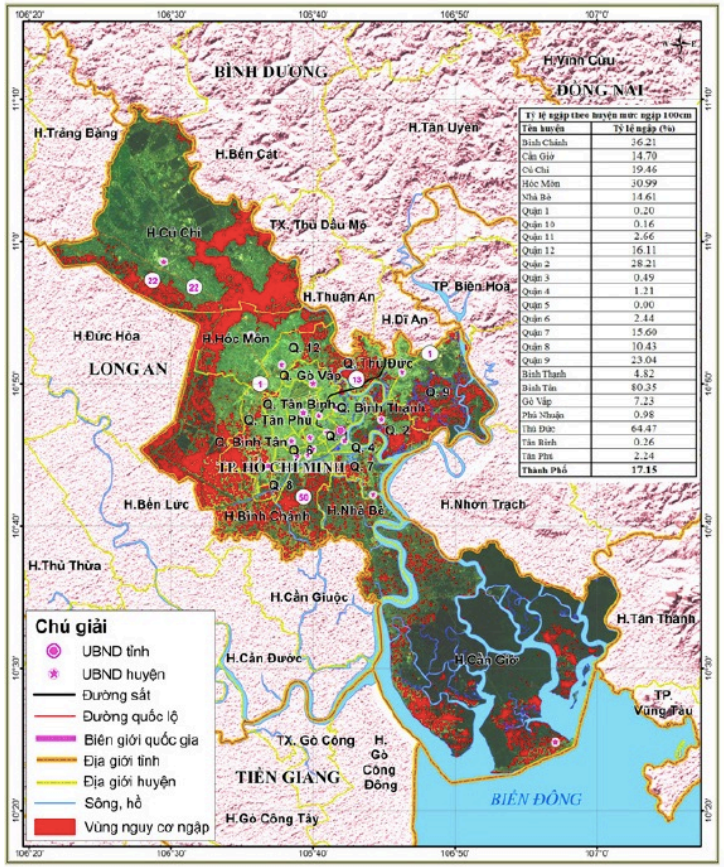
100cm sea level rise scenario



Quang Ninh & Red River (13.20%)



Cuu Long Delta (47.29%)



Ho Chi Minh City (4.84%)

Sea level 24-28 cm → 56-77 cm

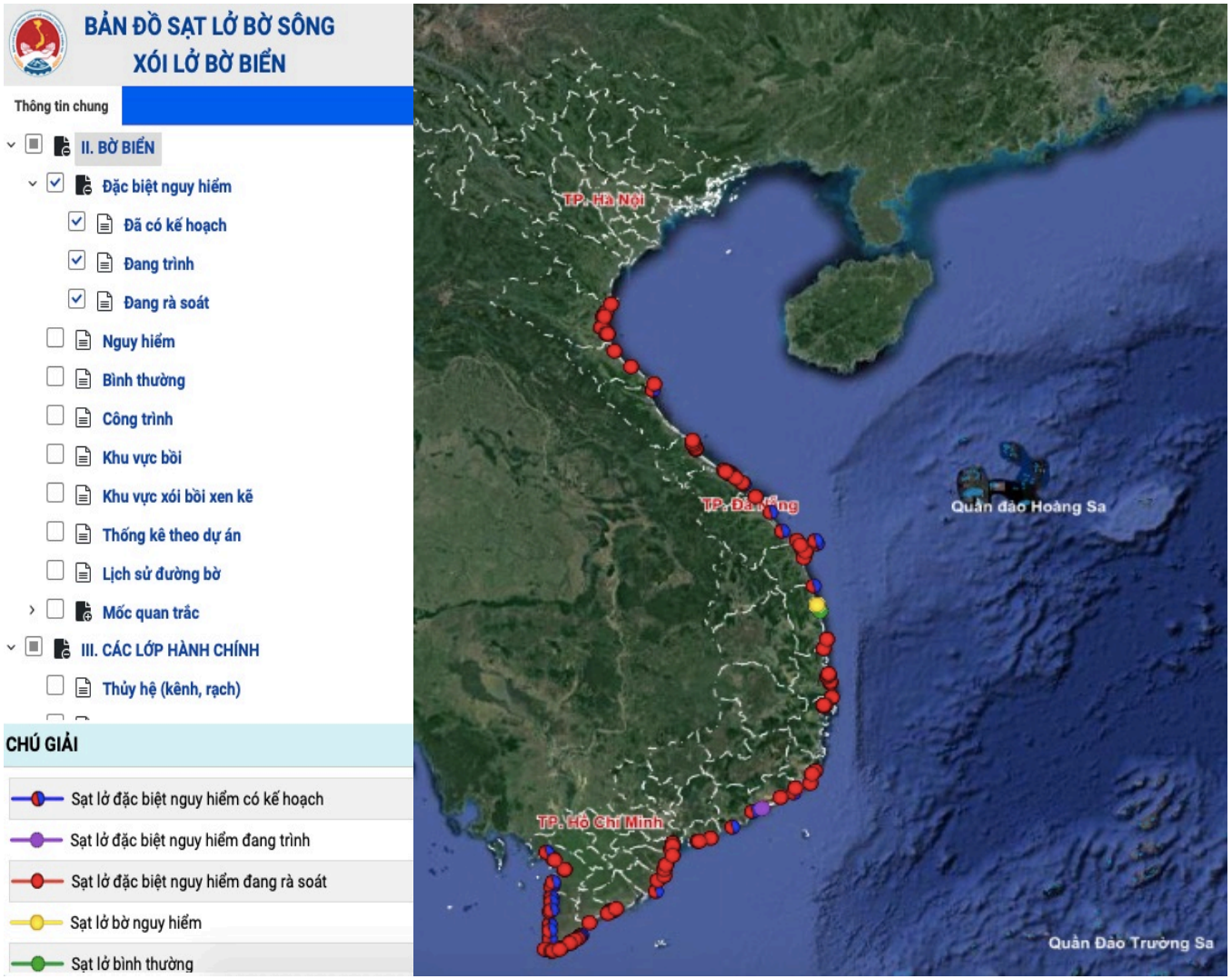
2050 → 2100

Wave height 9%

Strong storms

Source: MONRE (2021)

Coastline erosion



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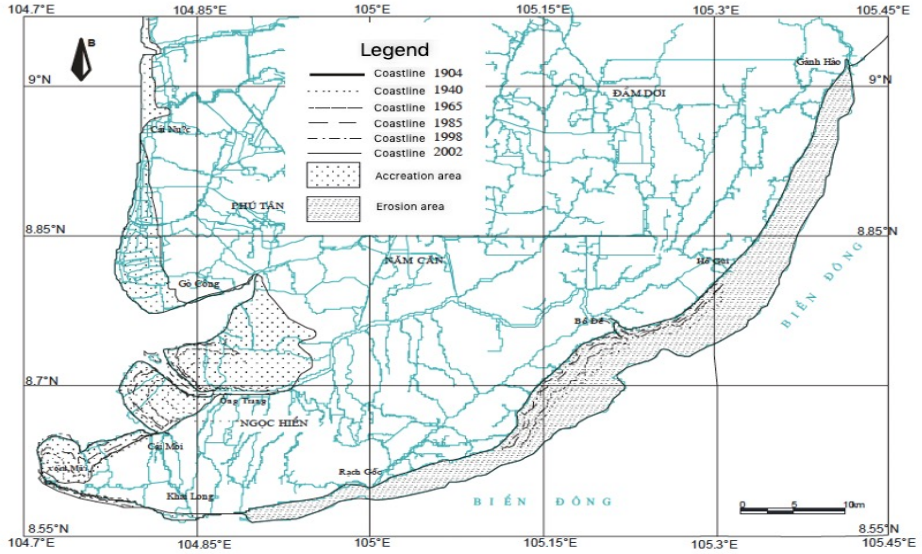
Change in coastline in Ca Mau



Lap, N.V et al. (2012)

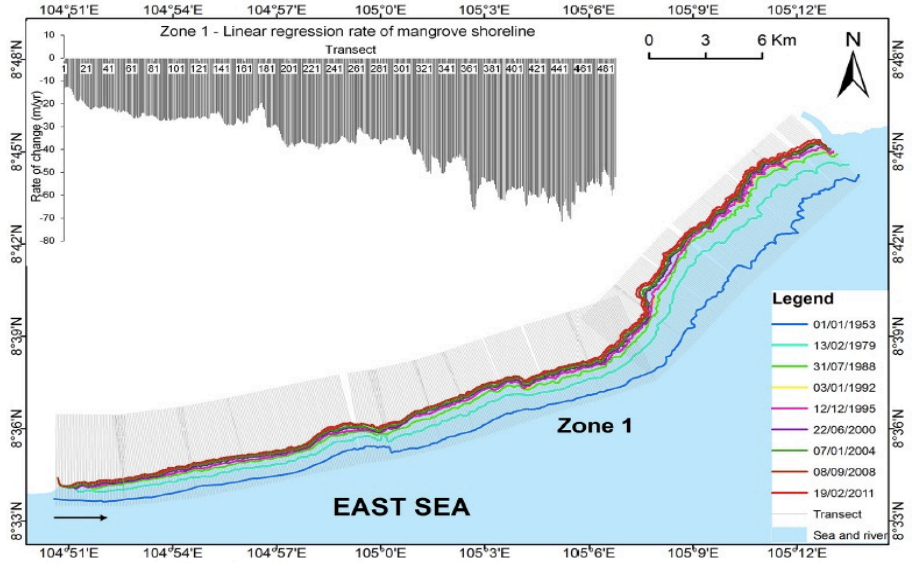
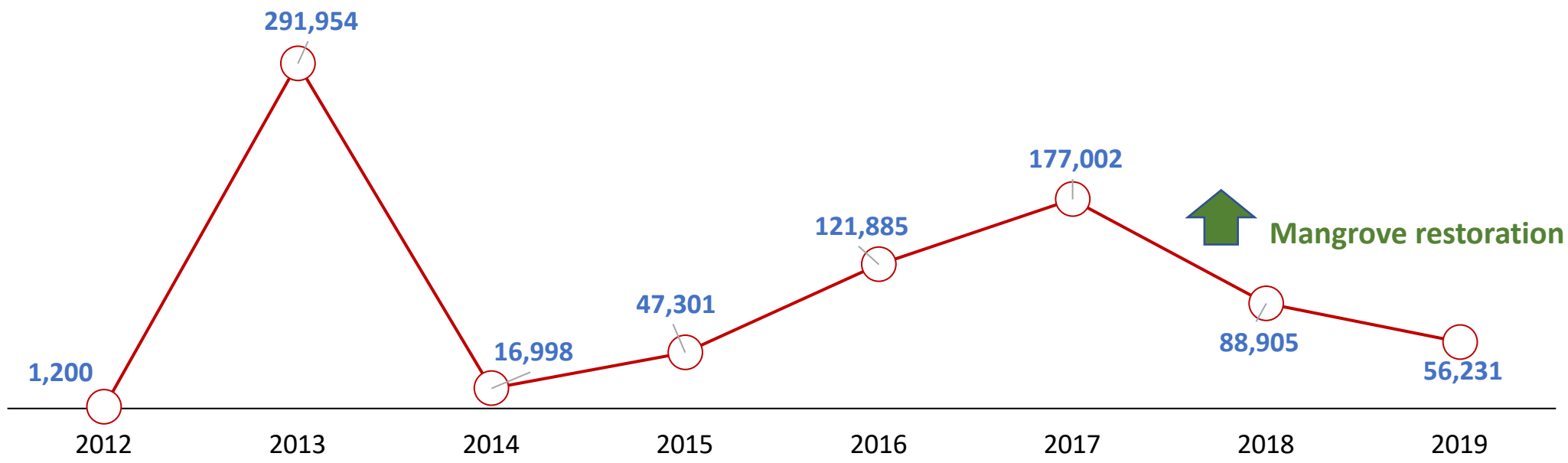


Figure 2. Mangrove shoreline changes in zone 1 which is located between Bo De and O Ro river mouths, along the East Sea. DSAS software generated 489 transects. The arrow shows the direction of transects from 1 to 489 which have a linear regression rate illustrated in the graph at the top left corner.

Tran Thi, V. et al. (2014)

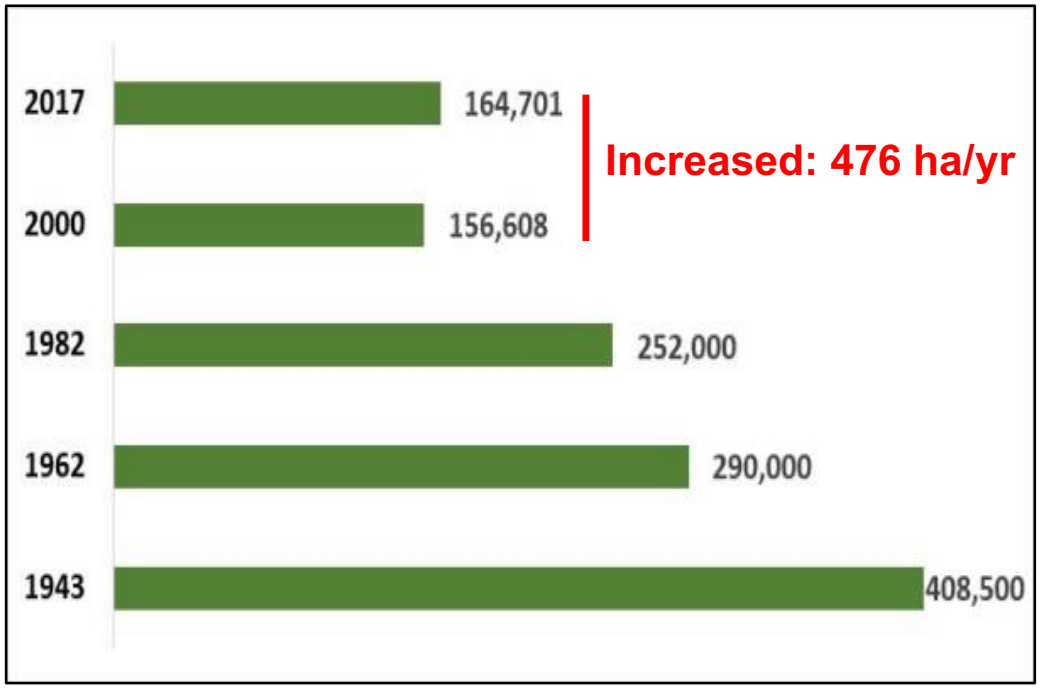
Damages

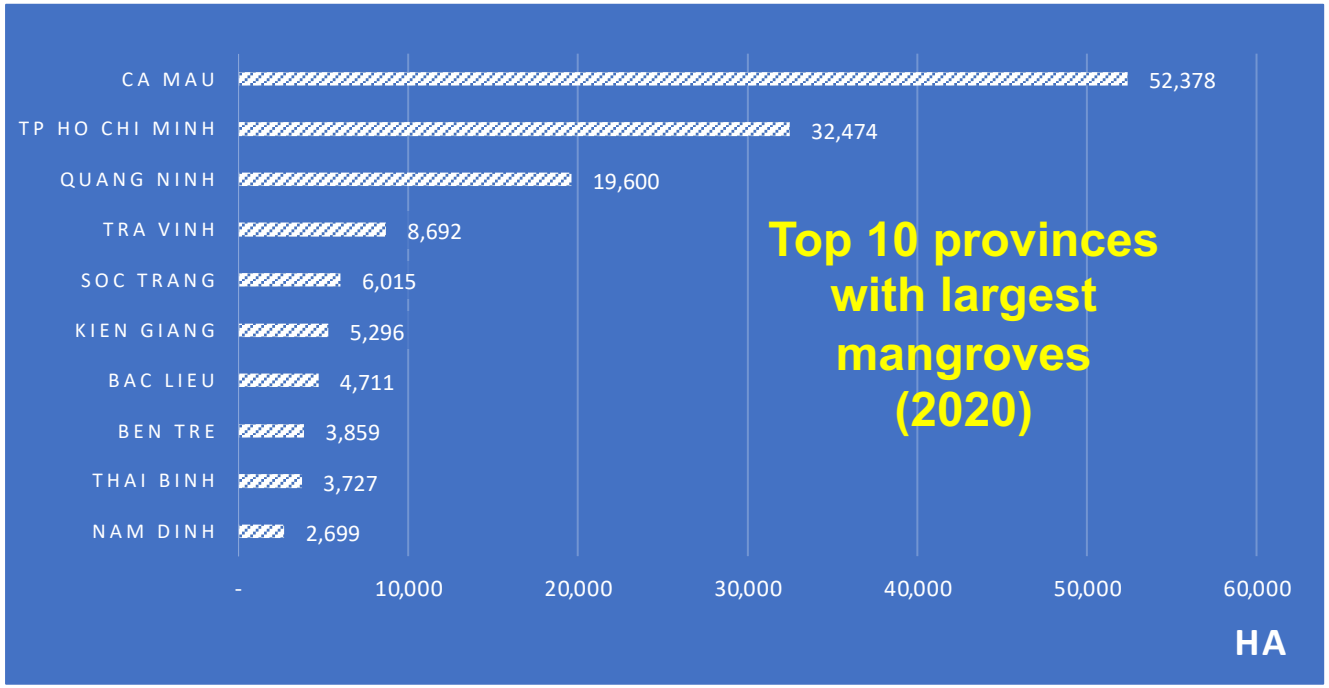


Total damage caused by coastline and river banks erosion (million dong)	93,246	58,837	11,604

Source: Vietnam Management Authority

Mangrove Area and Distribution





Mangroves distribute in 28 coastal provinces

Source: VNFOREST

Mangrove Species Distribution

There are distinct dominant species between southern and northern coastal area of Vietnam.

North
16 species

Kandelia obovata (Trang)
Rhizophora stylosa (Duoc voi)
Avicennia marina (Mam bien)
Sonneratia caseolaris (Ban chua)
Bruguiera gymnorrhiza (Vet du)

Central
23 species

Kandelia obovata (Trang)
Avicennia marina (Mam bien)
Sonneratia caseolaris (Ban chua)
Rhizophora stylosa (Duoc voi)
Aegiceras corniculatum (Su)

South
33 species

Rhizophora apiculata (Duoc)
Bruguiera sexangula (Vet khang)
Ceriops decandra (Da quanh)
Lumnitzera racemosa (Coc vang)
Avicennia officinalis (Mam den)
Excoecaria agallocha (Gia)

Mangrove species composition is the richer from North to South.

Integrated management models of mangrove forests for climate change adaptation

- **Implementation agency: VAFS**
- **Period: 2012-2015**
- **The National Target Program to Respond to Climate Change**
- **Project sites: Quang Ninh, Ca Mau**

(1) 300 ha of community-based mangrove management (150 ha/province)

Ca Mau


Quang Ninh

- ✓ Develop regulations on SFM and regulations on creating financial sources for forest protection
- ✓ The number of cases of illegal fishing in manrgoves decreased by 80-90%

Integrated management models of mangrove forests for climate change adaptation

(2) Improve the quality of mangroves by supplementary planting 100 ha (50 ha/province)

- ✓ Quang Ninh: *R. stylos*a (800-1000 trees/ha)
- ✓ Ca Mau: *R. apiculata* (7000-10000 trees/ha)
- ✓ Survival rate > 83%, Good growth

Integrated management models of mangrove forests for climate change adaptation

(3) Livelihood development: Support for aquaculture under mangrove canopy for 100 households (50 HHs/provinces)





- ✓ Support seeds
- ✓ Technical tranings for sustainable aquaculture under mangrove canopy

Community-based mangrove restoration and management

- **Location: Thanh Hoa**
- **Period: 2006-2011**
- **CARE Australia and Metro Company – CARE Denmark**

287 ha of mangroves planted with community participatory (Sonneratia, Candelia)




Improved livelihood security and reduced vulnerability of the coastal communities

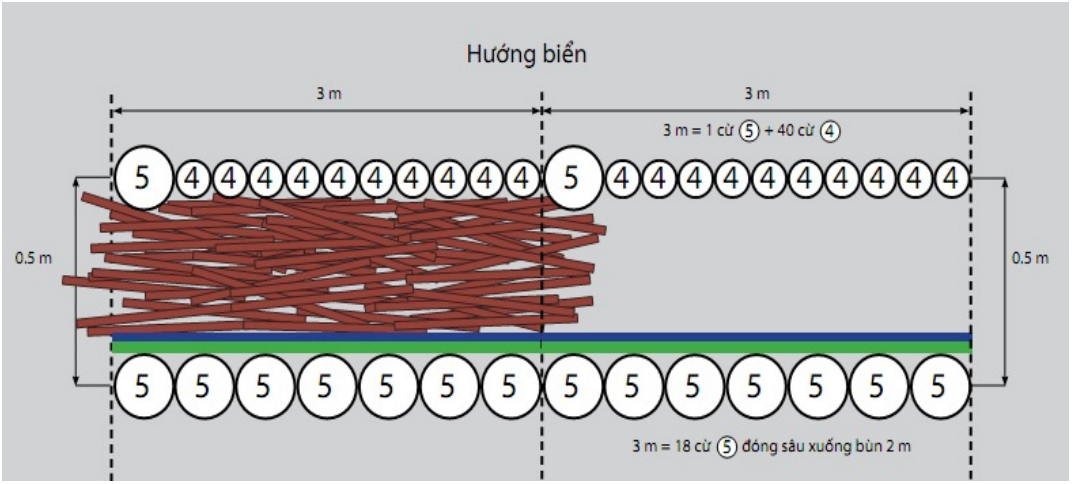


Coastal constructions to support mangrove restoration in severe erosion coastal areas in Ca Mau

Build concrete dams to protect from strong wave, coastline erosion and facilitate accretion of muddy bank for natural regeneration of pioneer species (impact on the first phase of mangrove succession).

Build a bamboo fence to facilitate plantation of *Avicennia alba* to promote mangrove succession process and fix muddy bank.

Mangrove plantation on unstable mudflats in Ca Mau (2017-2020 - VAFS)



Wave reduction fence

- ✓ Density: 50,000 – 118,000 trees/ha
- ✓ Formulate a forest ban to reduce wave speed and protecting the inner ecosystem.
- ✓ No surface erosion was recorded

GCF Project: Improving the resilience of vulnerable coastal communities to climate change related impacts in Viet Nam

- Location: Thanh Hoa, TT Hue, Quang Ngai, Quang Binh, Quang Nam, Ca Mau, and Nam Dinh
- Period: 2017-2022

1. Storm and flood resilient design features added to 4,000 new houses on safe sites, benefiting 20,000 poor and highly disaster exposed people in 100 communes;
2. Regeneration of 4,000 hectares of coastal mangrove storm surge buffer zones;
3. Increased access to enhanced climate and loss and damage data for private and public sector application in all 28 coastal provinces of Viet Nam.

Pilot project on mangrove PFES in Dat Mui NP, Ca Mau

- ✓ Established a PFES payment mechanism between Seafood enterprises – Forest Owner (Forest management boards) – Farmers
- ✓ For the period 2016-2018 (3 years):
- 1000 households participating in the pilot
- 2818 hectares of pilot mangrove forest
- Total payment to households: USD 153,813.
- ✓ As a result, mangroves are well protected, organic shrimps are sold at high prices, bringing benefits to all relevant stakeholders.

- Mangrove-based interventions for coastal protection must be approached with integrated measures in terms of management, plantation/restoration, community supports and awareness raising.
  - Management: Co-management and co-benefits sharing
  - Plantation/restoration: Strictly comply with technical requirements (planting site, planting time, seedlings…), coastal protection targets (planting density, species…), supplementary measures applied to adopt to specific coastal area (unstable mudflat, severe erosion).
  - Community supports: Sustainable fishery under mangrove canopy, livelihood improvement supports, limit and overcome damages caused by coastal disasters
  - Awareness raising: Trainings at the site, communication products (manual, posters, brochures, videos…), CSOs involved
- Community consensus and participation are compulsory for the success and scale-up of a project.

Photo: Xuan Thuy NP

Thank you

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