

# Wetland Restoration

## Lessons learned from Kien Giang Biosphere Reserve

Chu Van Cuong<sup>1</sup>, Peter Dart<sup>1</sup> and Sharon Brown<sup>2</sup>

<sup>1</sup> University of Queensland , St Lucia, Brisbane QLD 4072

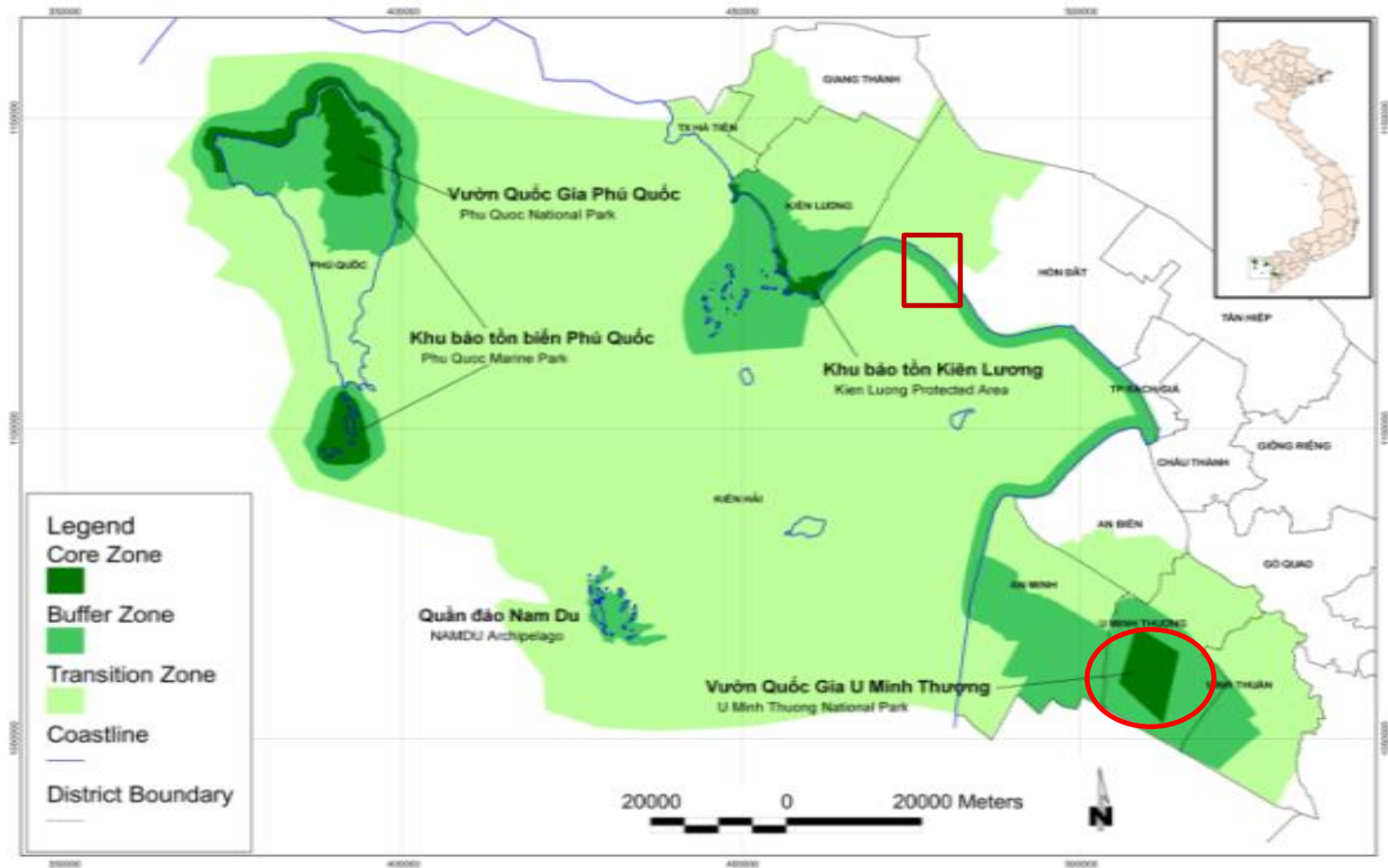
<sup>2</sup> University of Tasmania, Hobart TAS

# Kien Giang Province

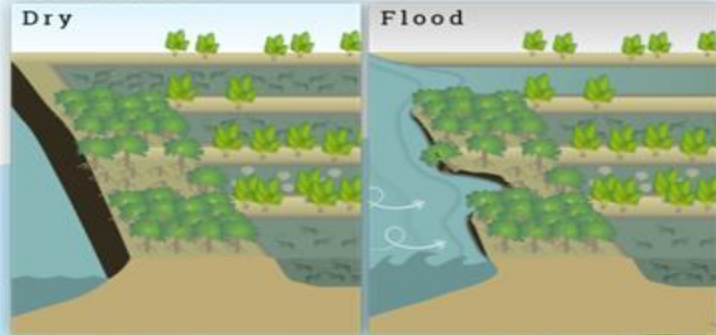
- Mekong Delta rice bowl of Viet Nam but impacted by sea level rise
- Diverse wetland ecosystems
- Wetland loss and fragmentation from **large scale conversion** to rice and aquaculture
- Inappropriate management and restoration practice



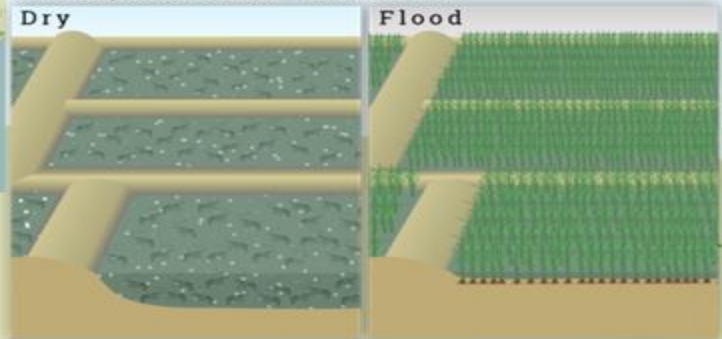
# Kien Giang Biosphere Reserve established in 2006



### 7:3 AREAS



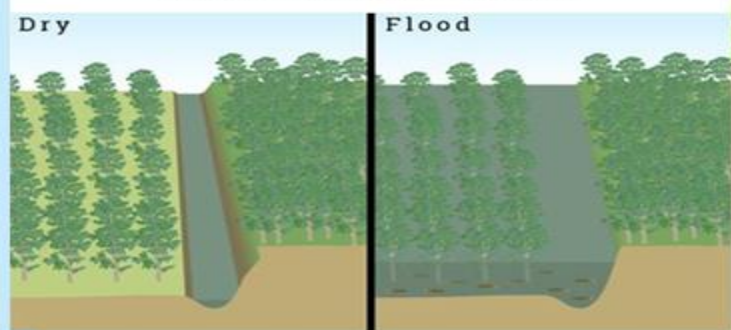
### RICE/SHRIMP FIELDS



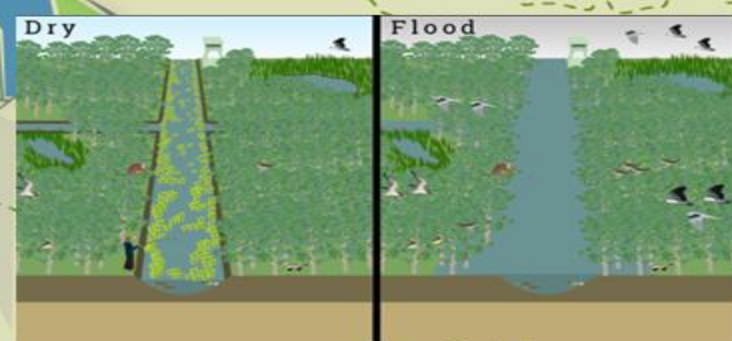
7:3 areas



### U MINH THUONG BUFFER ZONE



### U MINH THUONG



# U Minh Thuong National Park

- Largest remaining **peat swamp melaleuca forest** in Vietnam.
- High biodiversity and **Important Bird Area** (173 species)
- Provides fresh water, fish /fingerlings for local people
- National historical and cultural significance
- Large scale forest loss and degradation
- Hydrological conditions changed by massive canal development
- High threat of fire
- Inappropriate water management (permanent and deep flooding) after very large fire in 2002



# Improved water management for wetland restoration

- An improved management plan applied in 2010 as outcome of the national consultation workshop.
- Releasing flood water from the park led to:
  - ✓ Recovery of wetland hydrology
  - ✓ Recovery of wildlife habitats especially for **water birds** (population increased by 33 % after 3 years)
  - ✓ Preserved 3,900 ha forest and peat land (2.7 mil. tonne CO<sub>2</sub> equivalent)
  - ✓ Supported melaleuca regeneration and reduced floating exotic plants
  - ✓ Improved provision of ecosystem services



# Mangrove forest in Kien Giang

- 5,000 ha over 74 % of 200 km Provincial coastline.
- Allocated to 2,011 households under **7: 3 policy** (70 % mangroves & 30 % for aquaculture).
- Losses to **large scale aquaculture**
- 30 % of the coastline **eroded**
- Threatened by sea level rise
- **Over 50 %** of mangrove plantings **unsuccessful**.



# Mangrove Restoration using Melaleuca Fences

- Melaleuca poles (*M.cajuputi*) used for fences in mangrove restoration
- Wave energy reduced by 63 %
- Fences retain up to 47 cm of the mud sedimented over 3 years
- 63 % (inshore) and 47 % (offshore) *Avicennia* seedlings survived
- Assist natural recruitment
- Enhance marine biodiversity
- Fence techniques being up scaled in Kien Giang and nationally.





# Conclusions

- Large areas of wetland in Kien Giang have been lost and degraded
- Remaining areas threatened by development, inappropriate management and climate change
- Good planning and interventions developed with external support are restoring wetlands
- Strong government commitment is needed for success
- Better outcome for wetland management based on ecosystem and biosphere reserve approach
- Need to promote wetland values through better communication and evaluation
- Integrating traditional knowledge and science provides improved management of wetland restoration

# Acknowledgement

GIZ Conservation and Development of the Kien Giang Biosphere Reserve  
Kien Giang Biosphere Reserve Management Board