



Governance of Flood related risks in the Mekong Delta of Vietnam in the context of Climate Change

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Bach Tan Sinh * and Le Anh Tuan**

* National Institute for Science and Technology Policy and Strategy Studies, Hanoi

** Faculty of Natural Resources and Environment, Can tho University, Can Tho

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- Introduction – background
- Nature and impacts of flood in Mekong Delta
- Case Study of Living with flood in An Giang Province
- Discussion: findings and challenges of local communities in pursuing living with flood

Overview of Mekong Delta (1)



The Mekong River Delta is a biggest agriculture and aquaculture production region of Vietnam.

The Delta supplies more than 50% rice and 65% fish for the country



Overview of Mekong Delta (2)

- MRD covers 40.000 km² (1/8 total area of VN)
- 17 million (21% total population of VN)
- Covers 12 provinces
- Important for economic development in VN (50% total food production of VN)
- 7 out of 12 provinces in flood prone areas
- Flood area covers 2million has (50% of total area of Delta)

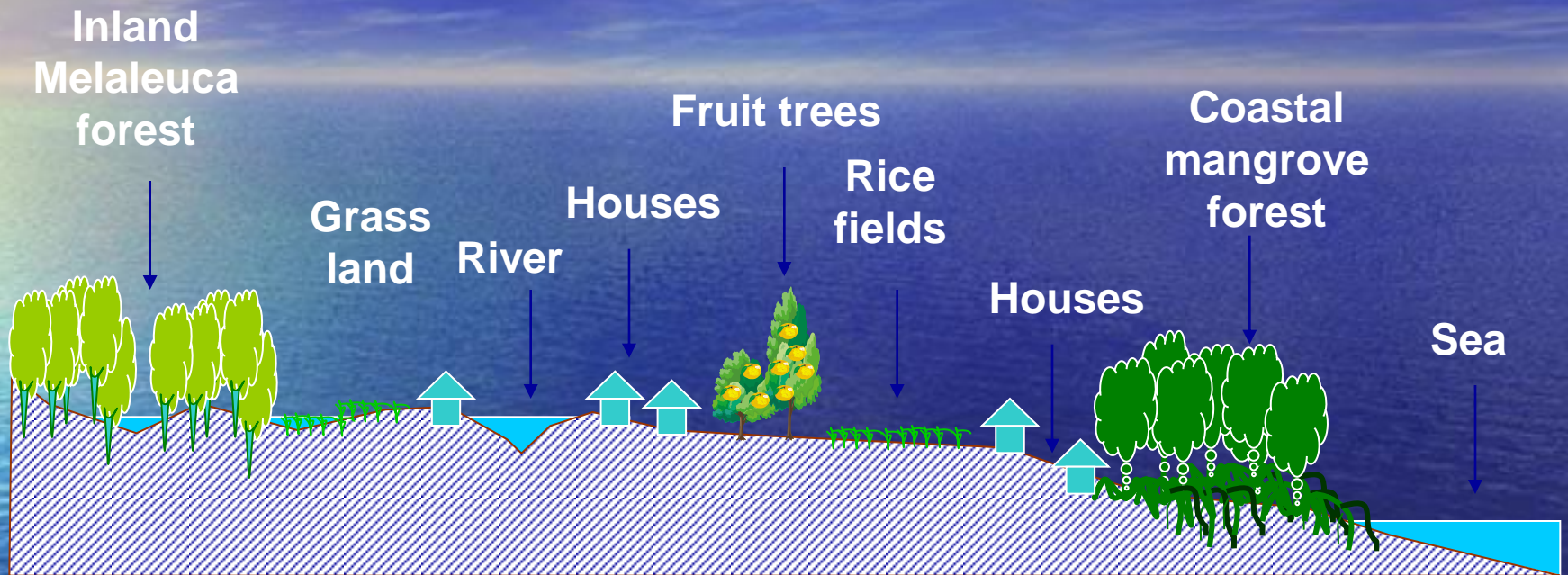




*The endangered Sarus
Cranes in Tram Chim*



MD is considered as a large wetland of the country which is very flat and low. This land has a high biodiversity and is very sensitive in ecological characteristics.



Melaleuca sp.



Rice and grass land

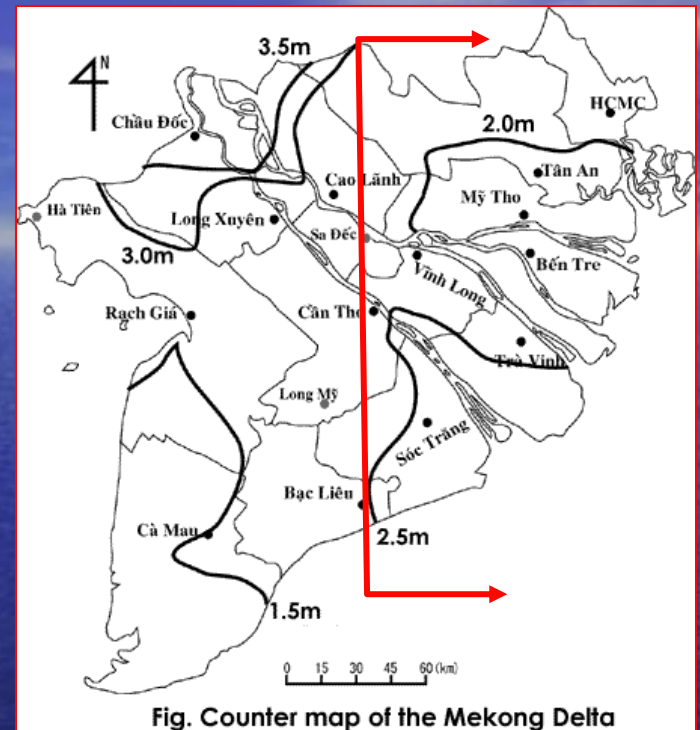
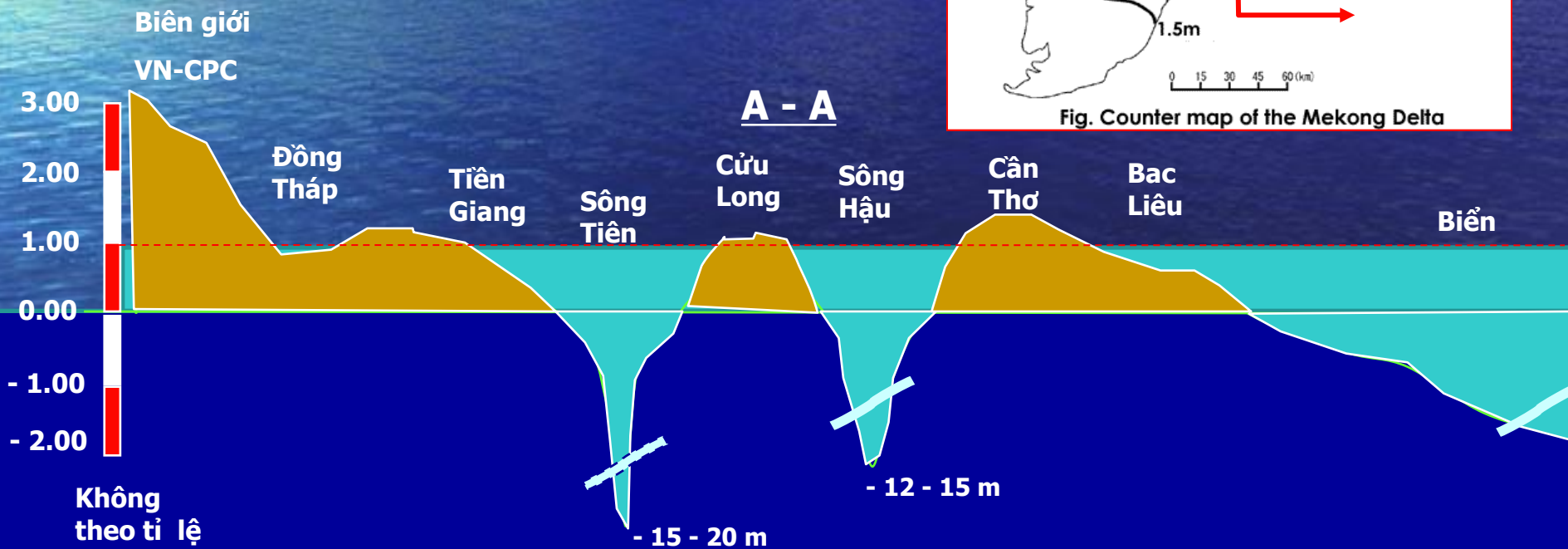


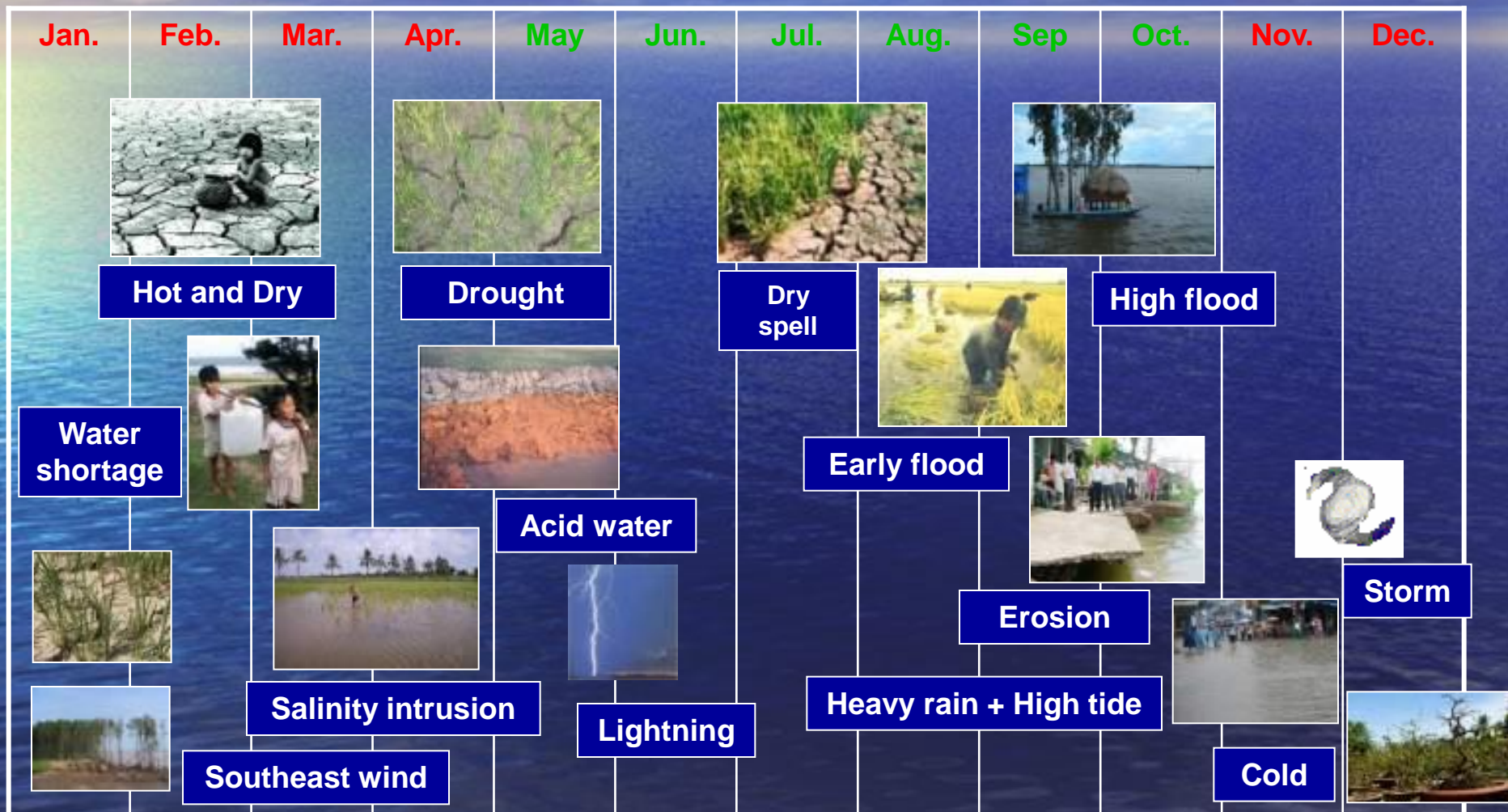
Rhizophora sp.



Coastal area

Cross-section level

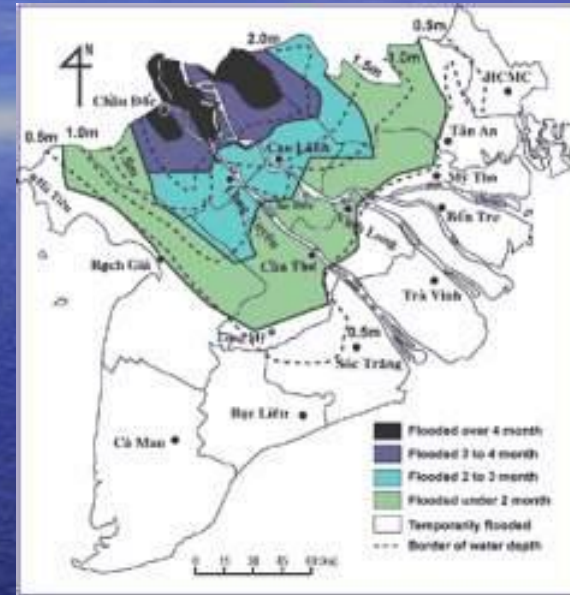
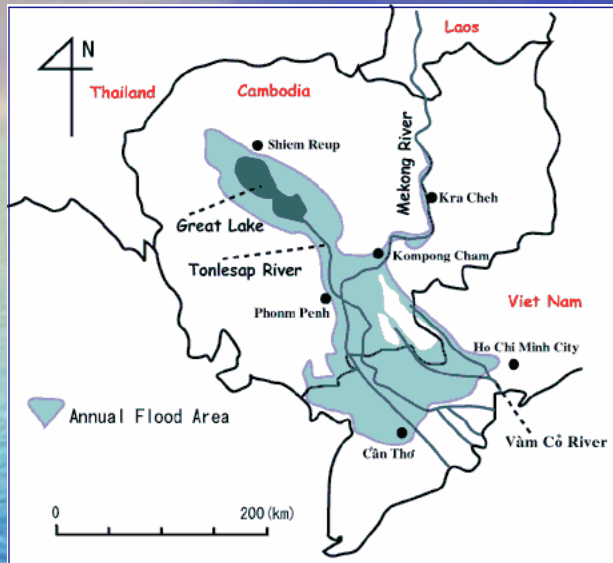




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The Nature of Flood

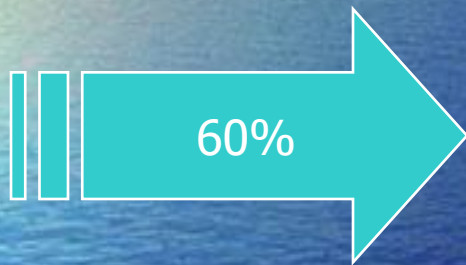


- Average discharge of the Mekong river during the wet season is about 39,000 m³/sec.
- About 1,2 - 1,9 million of hectares of the Delta can be flooded where farming becomes impossible.
- Annual floods are always a part of the life of natural and people .

High Flood in the MD will happen when 3 major factors come at the same time:



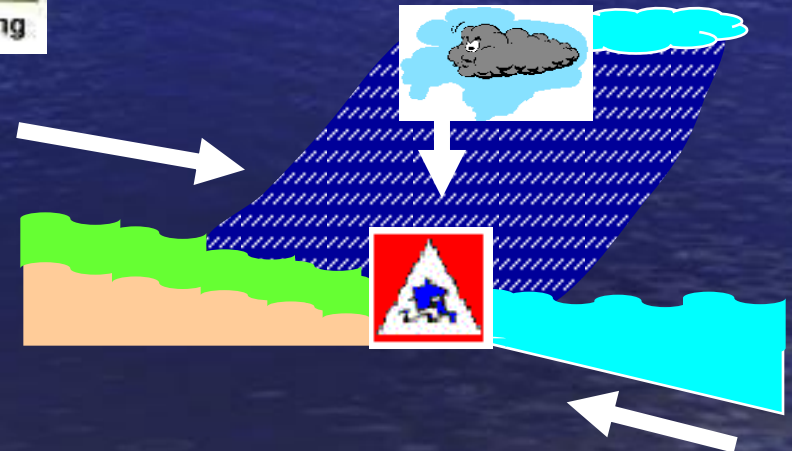
High flow discharge from upstream

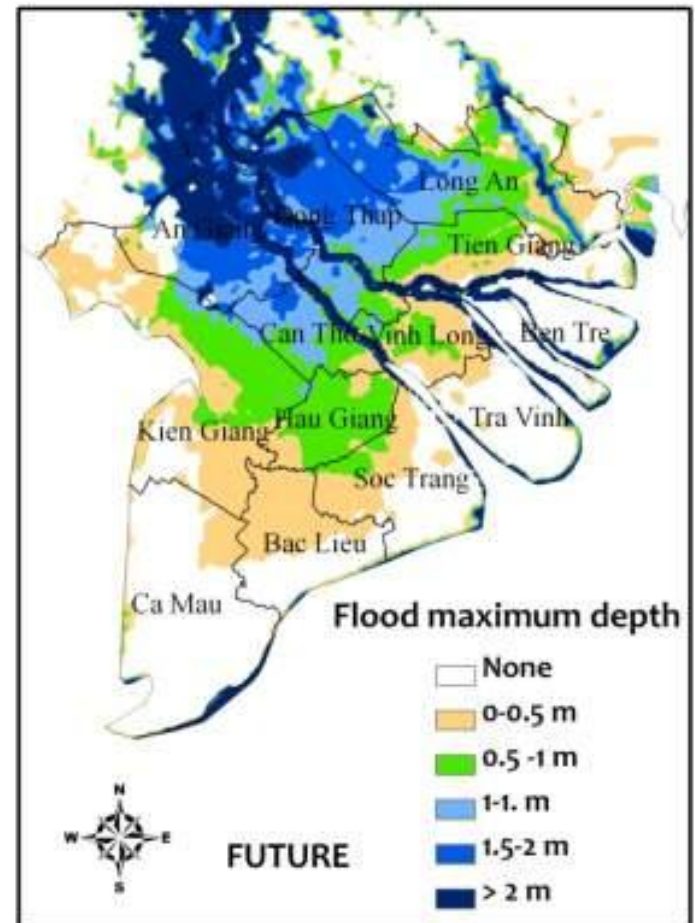
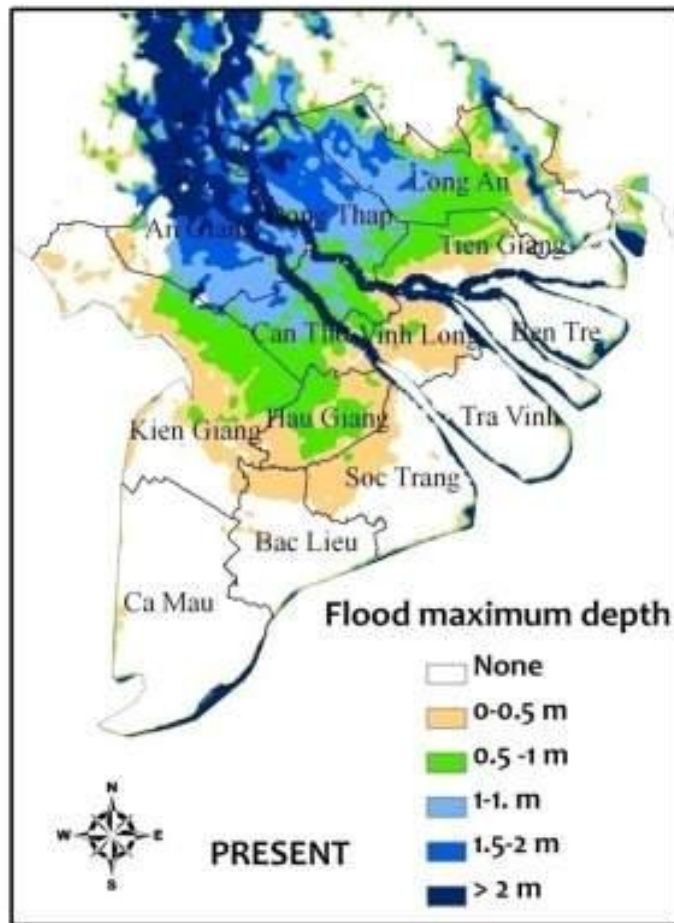


Heavy rainfall continuously



High tidal flow from the East Sea





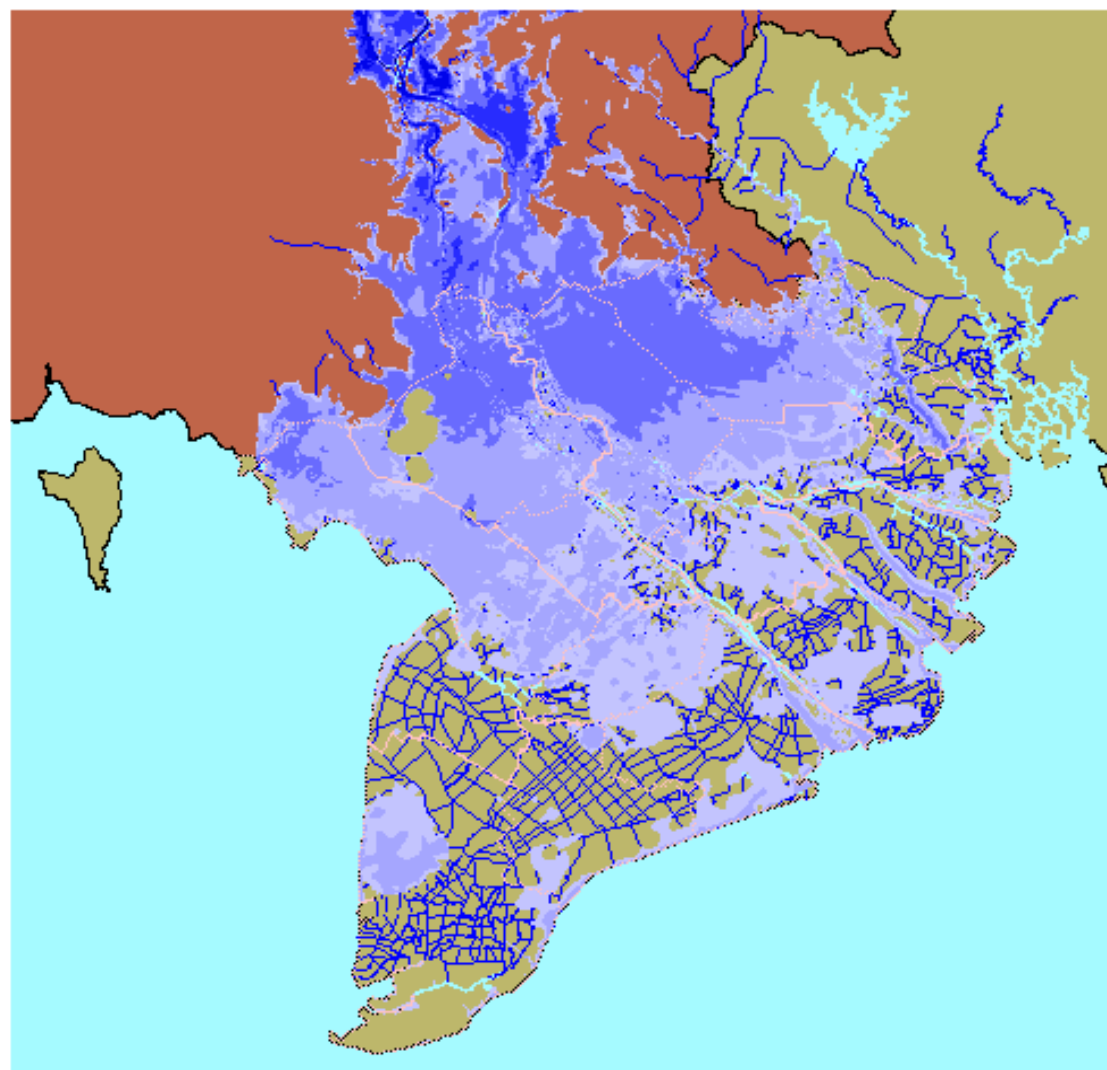
Flood boundary in Mekong River delta in 1980s and 2030s (simulated)

Impacts of flood

- Flood season: Jun – Dec
- In 2000 most severe flood: 400 dead, 5 million affected and 60.000 evacuated, 825000 houses damaged
- 2002: other severe flood with 163 dead, inundation of 72000 houses.



Flood extent in 2000



BAN DO NGAP LU LON NHAT
HIEN TRANG 2000 -

TU 1/7 DEN 30/12



- Ranh gioi tinh
- Hdep05
 - 0 - 0.5
 - 0.5 - 1
 - 1 - 2
 - 2 - 4
 - 4 - 6
 - 6 - 10
 - 10 - 26.707
 - No Data
- He thong song, kenh
 - Song SG-DN
 - Song Mekong
- Ranh gioi QQ
 - 1
 - 3
 - 4
 - 5

20 0 20 40 60 80 100 Kilometers

KET QUẢ SƠ BỘ MÔ PHỎNG MIKE 11

TGT&TDT - SIWRR

27/10/2008

Flood damages

The severity degree of the floods is increasing.

In 2000: the most damaging floods in 70 years.

760,000 houses are submerged; 67,000 families have been evacuated; 319 people have been died, of which 236 were children. The net loss has been evaluated at 2,670 billion VN Dong.



Flood in Can Tho City

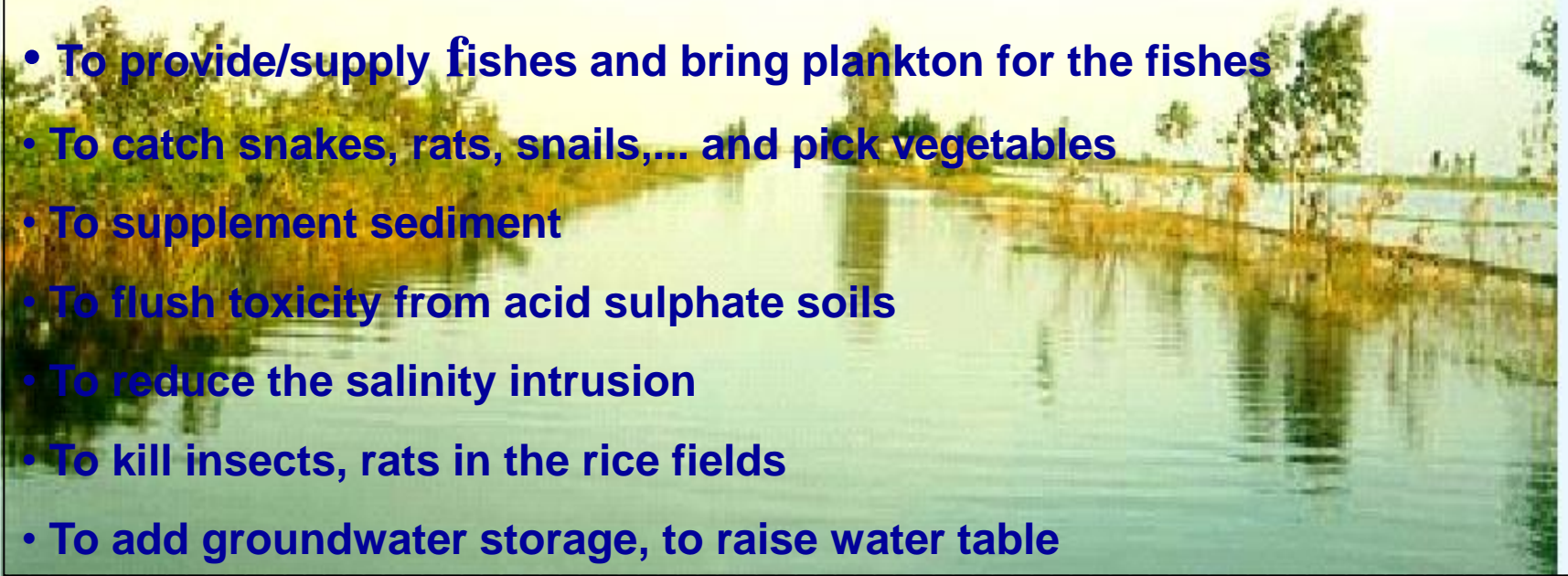


Flood benefits

The floods are not “the enemy” by farmers, even wanted.

Their benefits:

- **To provide/supply fishes and bring plankton for the fishes**
- **To catch snakes, rats, snails,... and pick vegetables**
- **To supplement sediment**
- **To flush toxicity from acid sulphate soils**
- **To reduce the salinity intrusion**
- **To kill insects, rats in the rice fields**
- **To add groundwater storage, to raise water table**

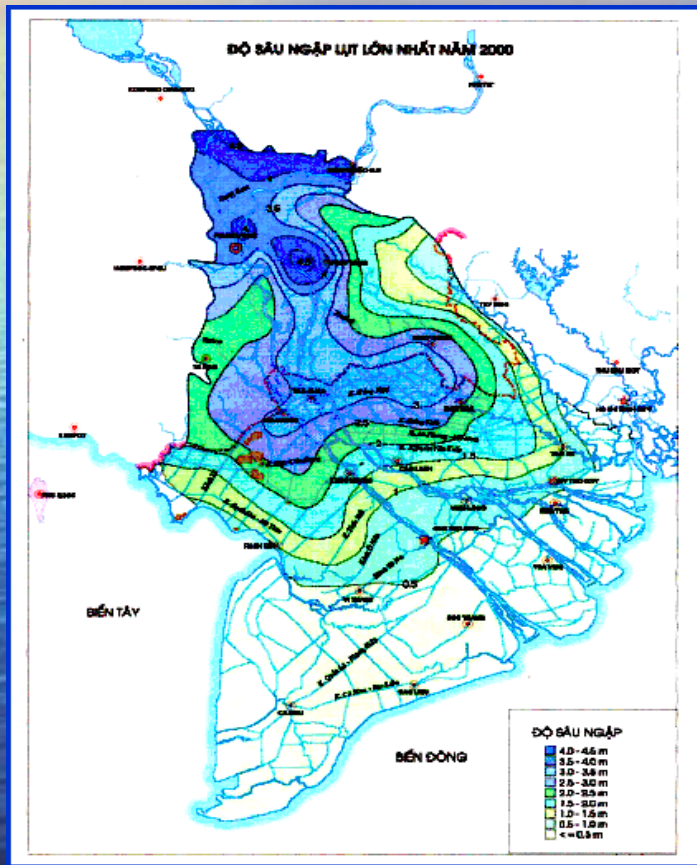


Motto:

From Controlling the Floods to Avoiding the Floods, Living with floods and Living without floods”

- **“Controlling the Floods”** includes the infrastructure works for protection the aqua-agricultural production and increasing the land-use coefficient and the safe of local people.
- **“Avoiding the Flood”** is applied to alert people at risk and to excavate of the local people out of flooding areas when having a very high water level raising.
- **“Living with flood”** and **“without flood”** is understood as the integrated solutions for adaptation human life and property.

The evolution of strategic notions towards floods



1. Traditional living with flood approach – avoid flood
2. Partly control of flood
3. Fully control of flood (1995-2000)
4. Constructively Living with flood (2001-2003)
5. Innovatively/happily living with flood (2004 -): AN GIANG CASE

Dialectic links between living with flood notion and pattern of natural resources use

- If the flooded land is mainly used for rice cultivation, then the flood is rather disaster than benefit;
- BUT if the flooded land is used for integrated, multipurpose development objectives, e.g. aquaculture, forest plantation, improvement of environment and tourism, then flood is the gift provided by the mother nature.

Control vs. Living with flood

- Two different Flood risk perceptions:
 - Flood as “lu/lut” – disaster, therefore needs to be prevented, controlled and reduced
 - Flood as “nuoc noi” “raising water level” – local experience something which exists with every-day live, thus living with flood is the alternative way to cope with disaster. “6 months for rice and 6months for fish”
- Control approach promotes structural measures, e.g. dykes, embankments around residential clusters
- Adaptive approach focuses on non-structural measures, e.g. diversification of agricultural activities during flood season, generation of additional jobs.

Structural measures

- Construction of flood-safe zones:
 - Residential clusters
 - Residential dykes

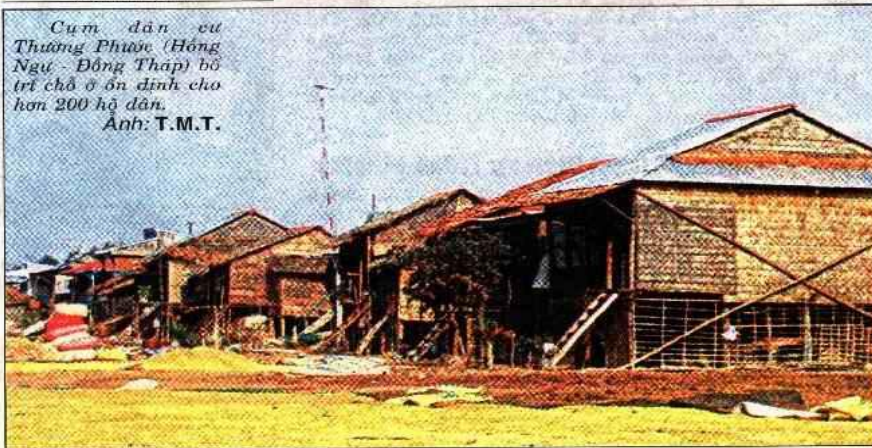
Đồng bằng sông Cửu Long Xây dựng 500 cụm tuyến dân cư cho trên 7.000 hộ dân

VĂN NGHĨA

(Xem tin trang 7)

*Cụm dân cư
Thường Phước (Hồng
Ngũ - Đồng Tháp) bố
trí nhà ở ổn định cho
hơn 200 hộ dân.*

Ảnh: T.M.T.



Residential cluster

- Residential cluster with infrastructures, e.g. commune office, school, health stations, market,..
- Linked with rice fields
- Along residential dykes



Semi-structural - Dyke systems in the Mekong Delta

- Full-dyke

- Height is designed based on the measured and calculated flood peaks.
- Ensures the safety for the people's daily activities and cultivation in the whole flood duration

- Semi-dyke

- The top height of the dyke is designed that it can ensures the second crop have been harvested before flood water exceed the field.





Life vest distribution



Health care boat



Rising house

**FLOOD
ADAPTATION
IN THE MD**



Flood prone areas



Flood childcare centers



**Flood protection
with sand bags**



Fishing in flood zone

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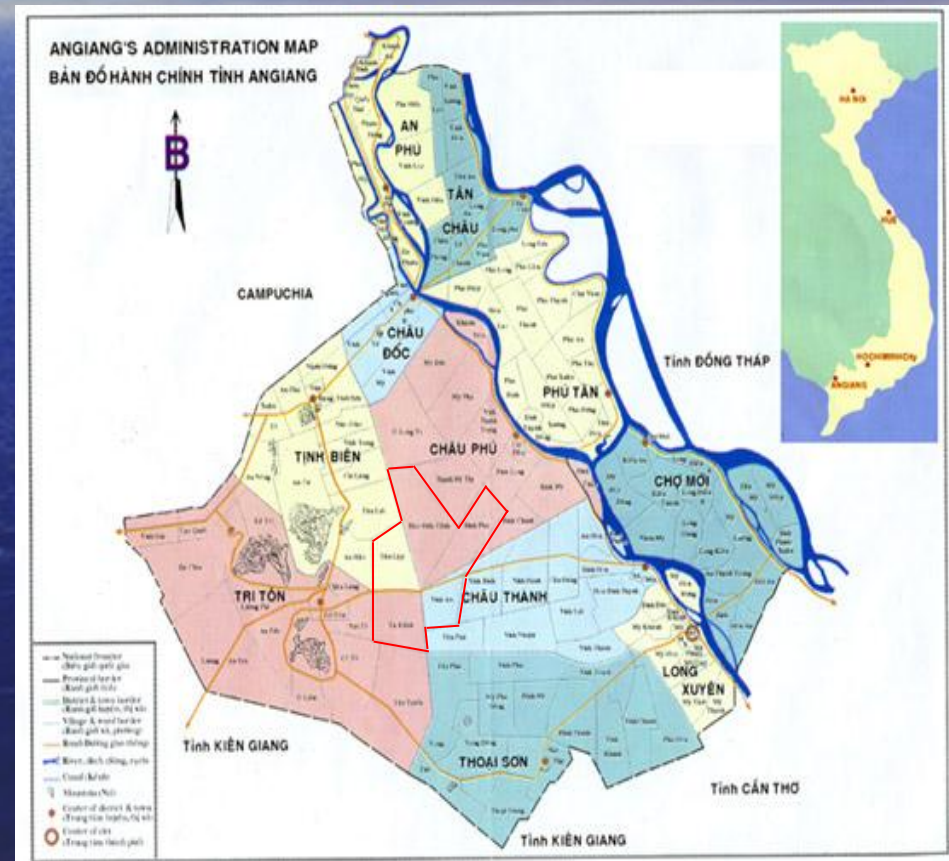
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Living with flood in Mekong Delta – the Case of An Giang Province

Overview of An Giang Province

- Area: 3400 km², of which 70% as agricultural land
- Diversified economic activities (agriculture, aquaculture, industry, commerce, services, and tourism)
- Most affected province



Local Province attitude toward structural and non-structural measures (1)

1/ Structural measures

Measures	Advantages	Disadvantages
Full-dyke	<ul style="list-style-type: none">• Protect crops, assets whole year round• Good condition for animal husbandry,• Better transportation infrastructure,• Generate more jobs• Safe for children, women	<ul style="list-style-type: none">• Reduce the soil fertility,• Reduce fish source,• Increase crop disease,• Water pollution,• High construction cost,• Influences to the water regime of the upstream and downstream areas → bank erosion
Semi-dyke	<ul style="list-style-type: none">• Prolong the cropping calendar (ensure the second rice crop and start the first crop earlier).• Increase the soil fertility,• Remove pollution,• Increase fish sources, reduce the wave so that farmer can grow fish• Less affect to the upstream and downstream.	<ul style="list-style-type: none">• High maintaining cost• Living condition is still difficult (drinking water, house, transportation).

Local Province attitude toward structural and non-structural measures (2)

1/ Non-Structural measures

- Shifting of cropping calendar: Winter-Spring crop earlier so that the Summer-Autumn crop finished before the early flood.
- Changing the cropping pattern and animal husbandry that suitable for the flood condition.
- Improving the post-harvest technology.
- Planting more trees along the roads and dykes to reduce the flood damages.
- Move people in the potential erosion areas and in the depth flood areas into the flood protected residential areas.

Local Province attitude toward structural and non-structural measures (3)

1/ Non-Structural measures

- Organize well trained ‘flood-guard’ teams
- Cooperate with the army to help the farmer in repairing roads, cleaning environment or harvesting rice (when the flood come early).
- Take care of the children in the flood areas (especially the poor children): swimming classes and kindergartens; Organizing better boat to pick up the children to school; Providing life vests.

An Giang's Local policy of "living with flood" (1)

- An Giang Province initiates approach to flood – living with flood by turning negative aspects of flood into positive aspects through the local Development Project No. 31 on "Diversification of Productions, Creation of Jobs and Improvement of Material and Cultural Living Standards of People in the Flood Season"

An Giang's Local policy of "living with flood" (2)

- Implements the Local Provincial Program to encourage people in exploring conditions provided by flood
 - Diversification of agricultural activities
 - Utilization of water surface to grow local vegetables (profits 2-3 times compared to rice)
 - Aquaculture
 - Raising fish in small ponds and underwater shelters
 - Livestock: raising cows
 - Off-farm activities: boat building, making nets, traditional handicrafts

Alternative incomes during flood season

Handicrafts from dried water-hyacinth



Micro-aquaculture by a poor living in a residential cluster





Stakeholder interaction in implementing living with flood policy

- Local government agencies
 - Horizontal: decentralization of planning and managing project activities to lowest level of administration
 - Bottom-up planning mechanism to coordinate and prepare provincial master plan for flood season
 - Vertical cooperation between various departments
- Integration with other programs (Hunger Eradication and Poverty Reduction)
- Mass Organization:
 - AGFU: assists in establishment of cooperatives and farmer clubs.
 - VWU: takes care of pupils from home to school.
- INGOs:
 - CARE International in capacity building for emergency flood response
 - French RC

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Findings:

- Living with flood policy of province assisted local people in sustaining their livelihood during flood season;
- Innovative translation of national guideline to practical measures by An Giang Province taken into account the local context and knowledge/wisdom toward living with flood;
- Cross-learning and scaling up to revise national policies - National Strategy on the Disaster Prevention, Control and Mitigation in Vietnam to the year 2020;

Findings:

- Benefits from floods, apart from negative impacts, should be explored and be part of flood governance.
- Living with and without flood strategy has been challenged in the context of climate change and upstream development – requiring new knowledge co-produced by different stakeholders including academic institutions and local communities – a combination of academic and local knowledge and wisdom.



Flower village in Dong Thap

Thank you very much for your attention

Dr. Bach Tan Sinh, NISTPASS. Email: sinhanh@hn.vnn.vn

Dr. Le Anh Tuan, CTU. Email: latuan@ctu.edu.vn