



Can Tho University
Trường Đại học Cần Thơ



IOM International Organization for Migration
IOM Tổ chức Di cư Quốc tế



Workshop on
CLIMATE CHANGE ADAPTATION AND MIGRATION IN THE MEKONG DELTA
Can Tho University, 4-5 June 2012

**CLIMATE CHANGE
IN THE MEKONG DELTA**

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OUTLINES

1. Mekong Delta regional background
2. Climate change projection for the MD
3. Climate change impacts to migration
4. Response strategy on climate change



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- 
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1. Mekong Delta regional background



Bản đồ vị trí các tỉnh
VÙNG ĐỒNG BANG
SÔNG CỬU LONG



The Mekong River Delta is a biggest agriculture and aquaculture production region of Vietnam (2,4 mil. ha of agricultural land/ 4 mil. ha total area)

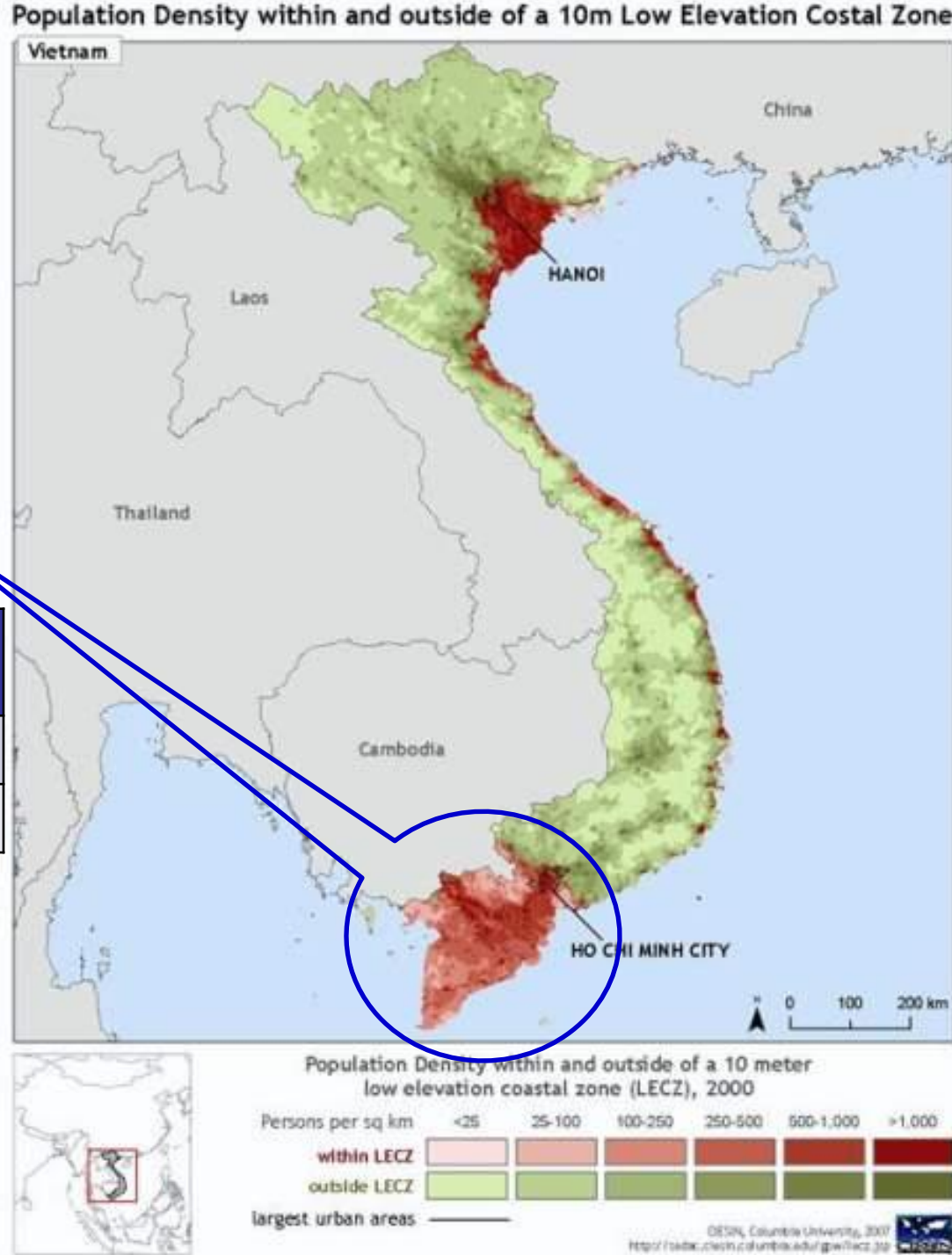
The Delta supplies more than 50% rice, 65% fish and 75% tropical fruit for the country. In 2011, the MD exports more than 7 mil. tons of rice to the world.

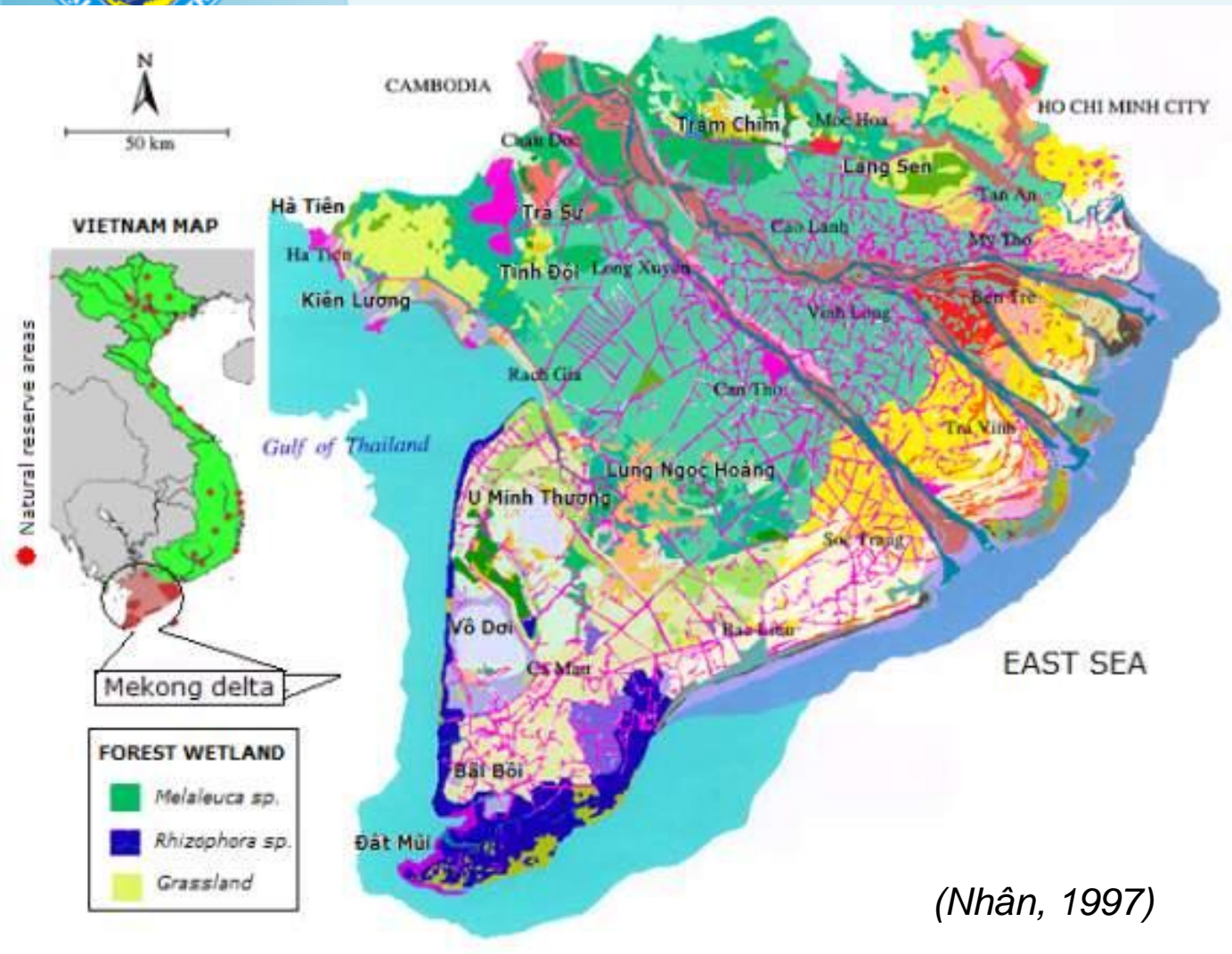


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The Mekong Delta is the most vulnerable area where all the entire population living within of under a 10 m low elevation coastal zone (LECZ).

Sea level rise (m)	Land lost (%)	Pop. displaced (%)
# 1.0	# 25	# 20 (3.5 mil.)
# 2.0	# 50	# 75 (14 mil.)



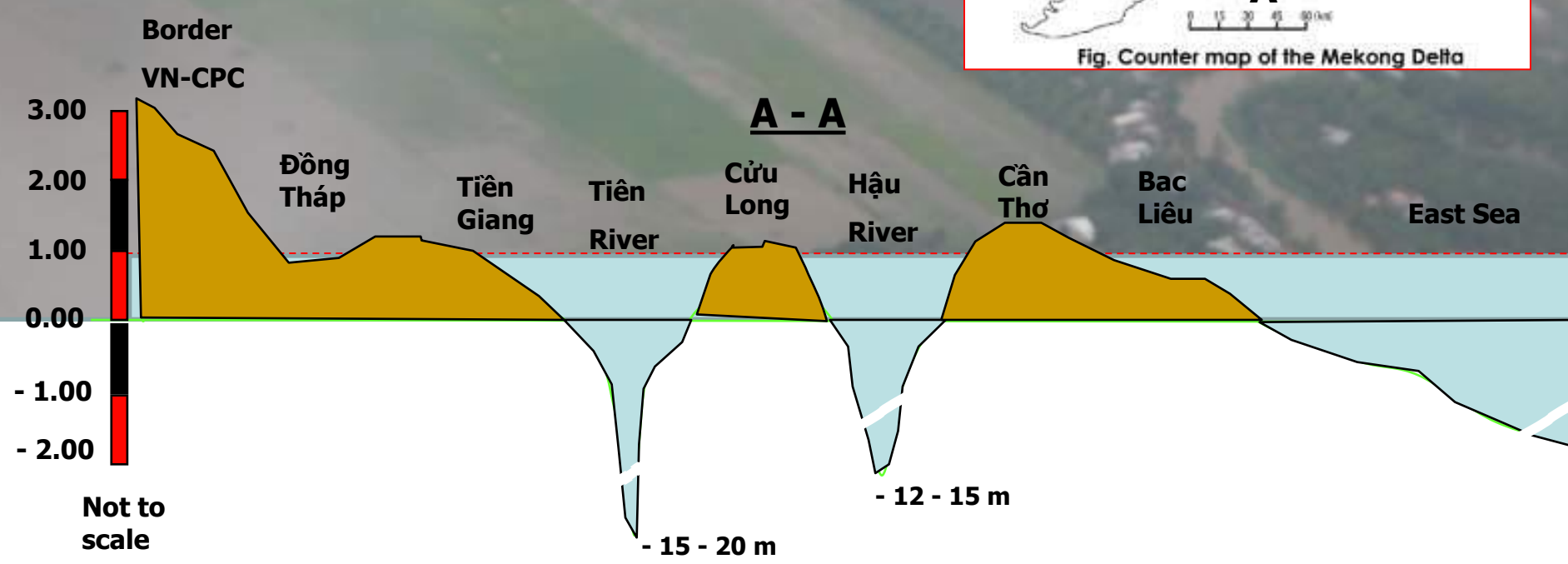
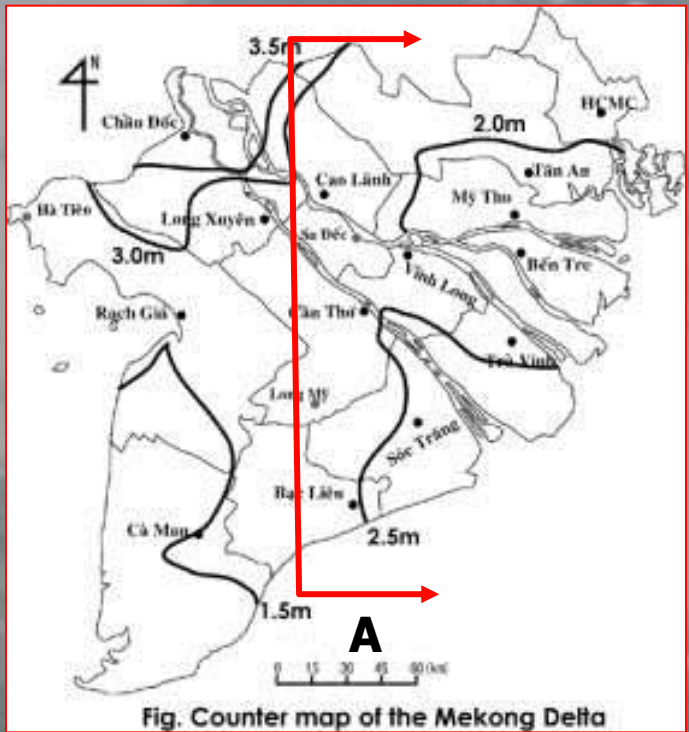


(Nhân, 1997)



MD is considered as a **largest wetland** of the country which is very flat and low. This land has a **high biodiversity** and very sensitive in ecological characteristics. (Tuan and Wyseure, 2007)

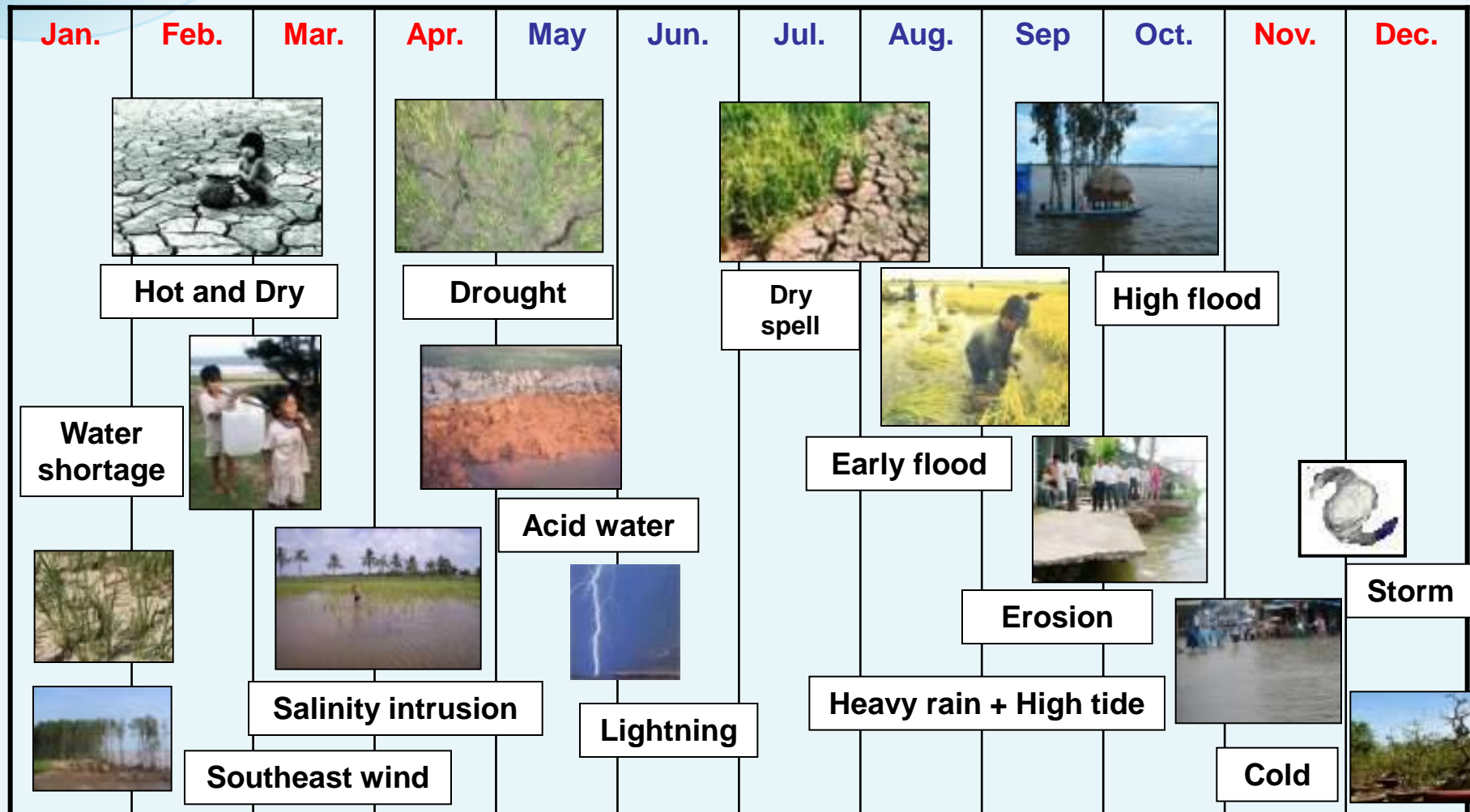
1. Regional background

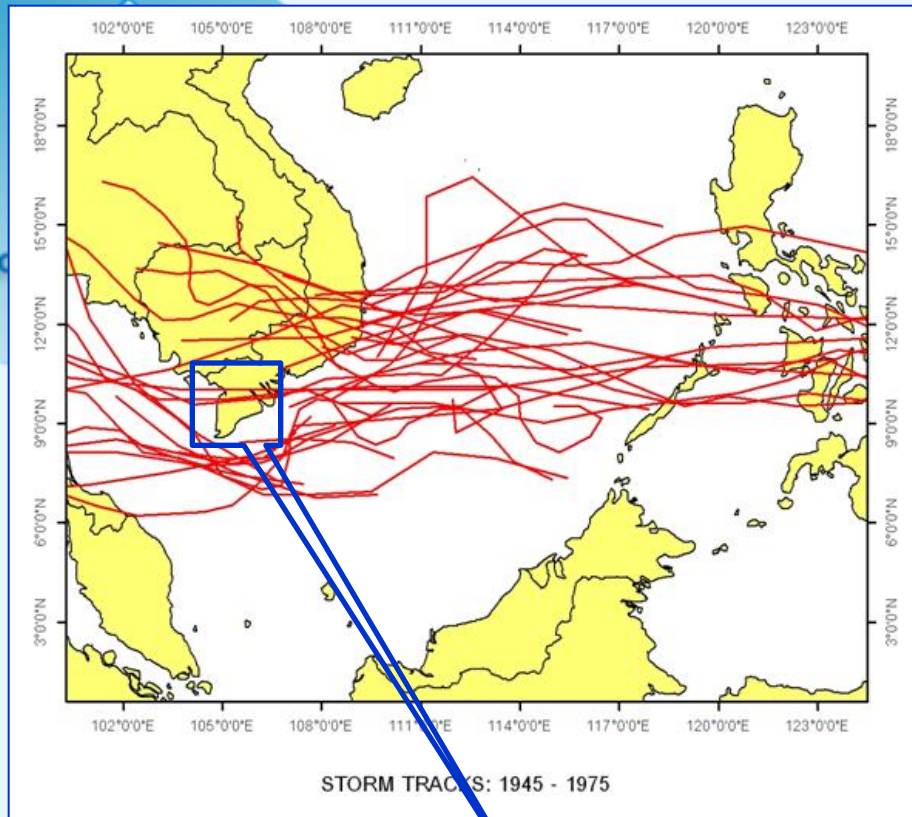




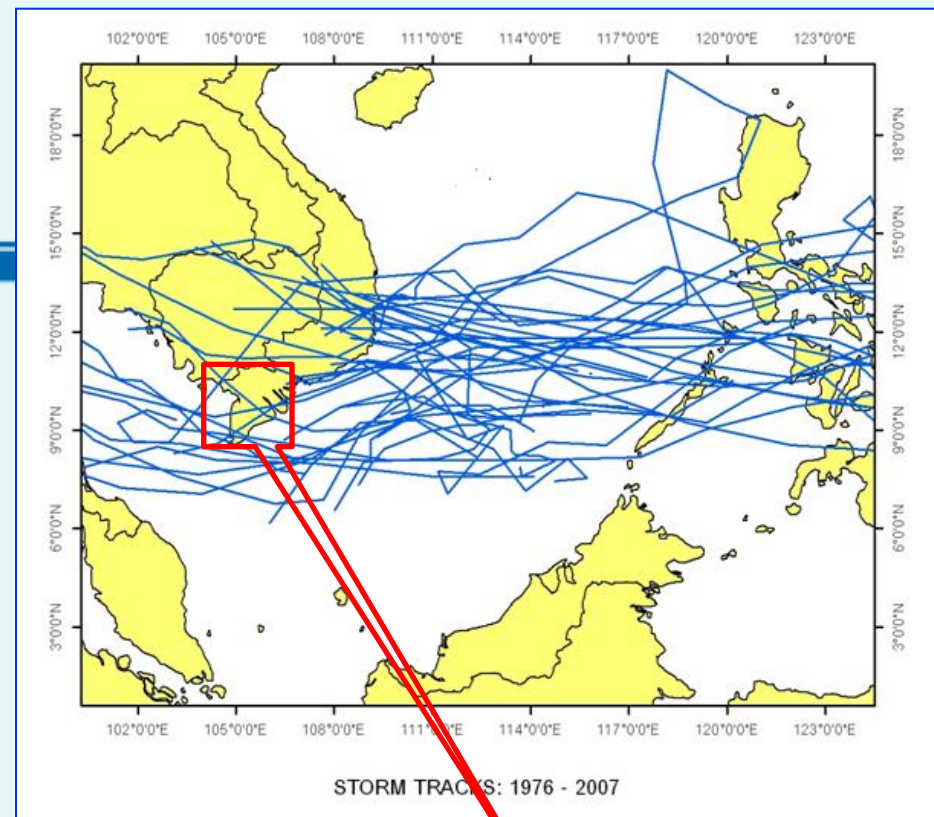
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The Mekong Delta is not really a "good weather" region...

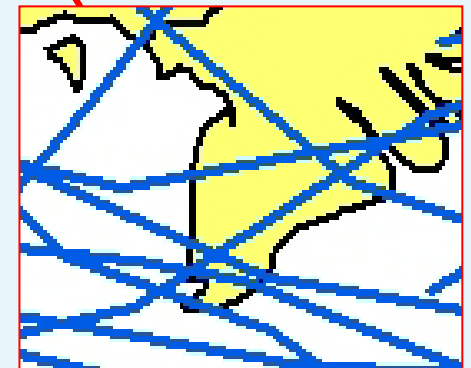




**Storms attached
to the South of
Vietnam in
1945 - 1975**

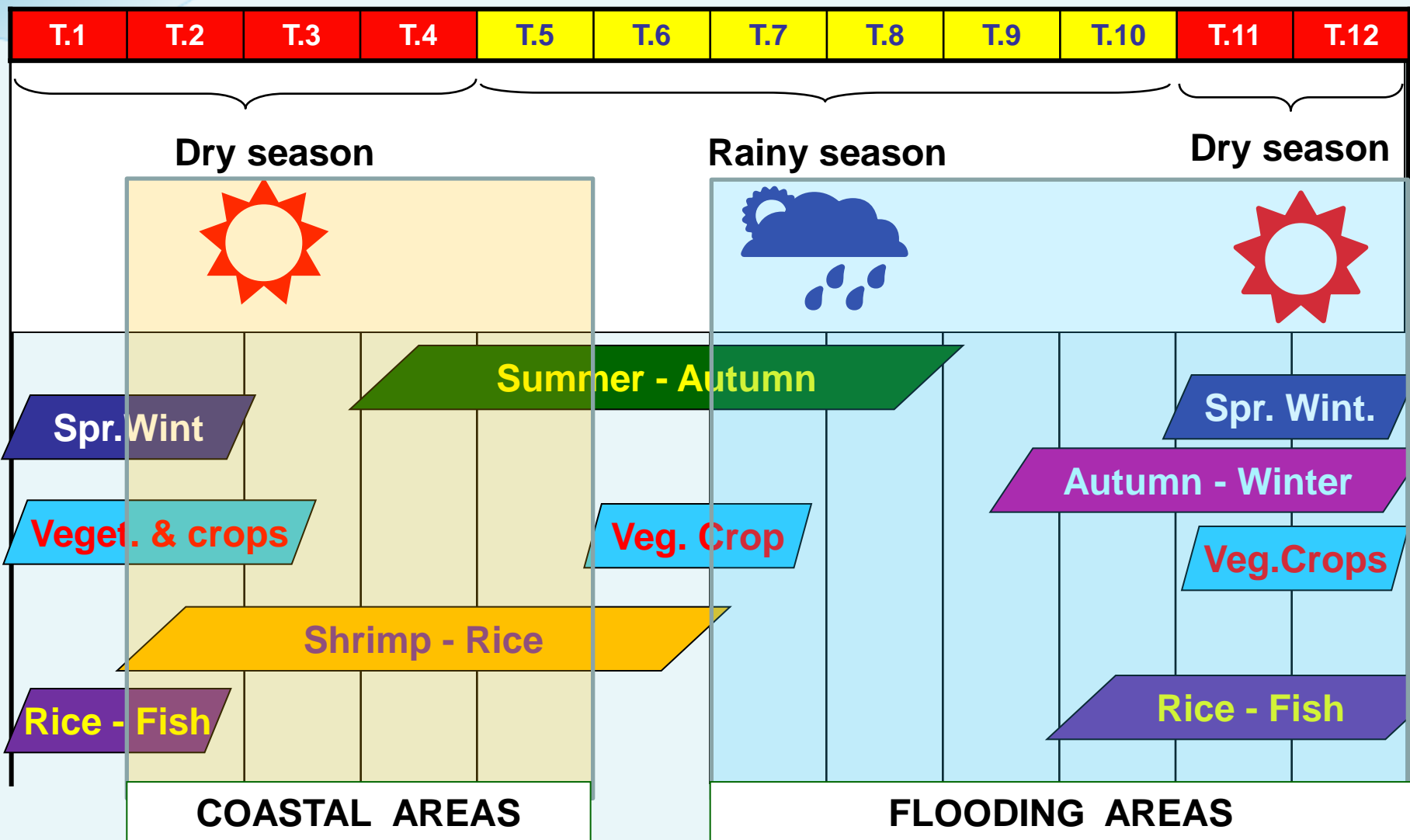


**Storms attached
to the South of
Vietnam in
1976 - 2007**





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“More than the pass ten years, climate change has become one of the most socio-economical and environmental problems for the world...”

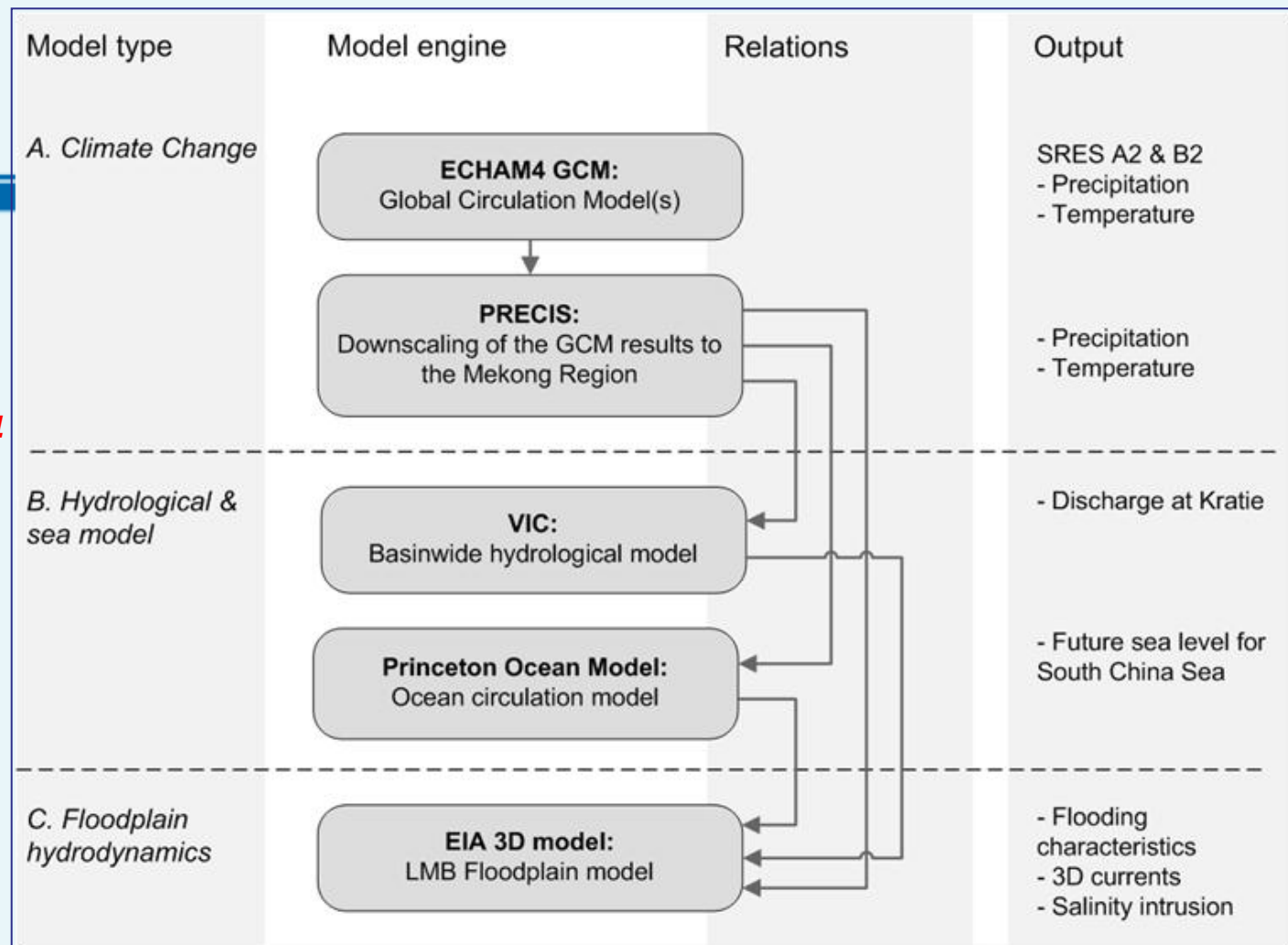
The Intergovernmental Panel on Climate Change has identified the Mekong Delta in Vietnam as one of three hardest-hit delta regions by climate change worldwide (IPCC 4th Assessment Report, 2007).



OUTLINES

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The future climate projection data was simulated by ECHAM4 Global Circulation Model under IPCC SRES. A2 GHG scenario and downscaled to high resolution using PRECIS regional climate model.



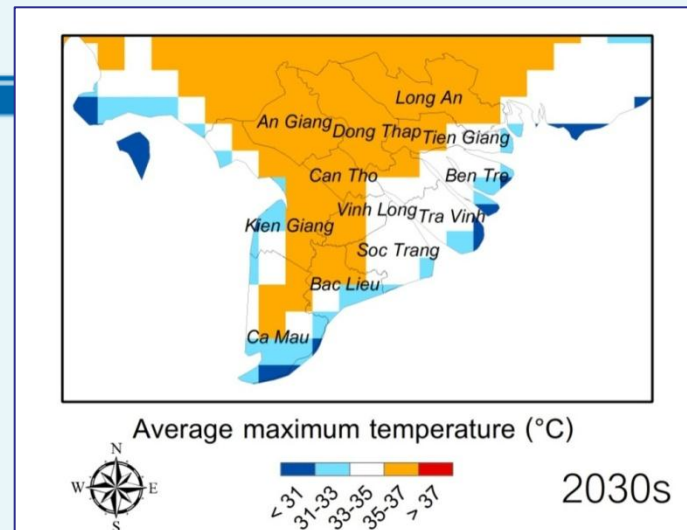
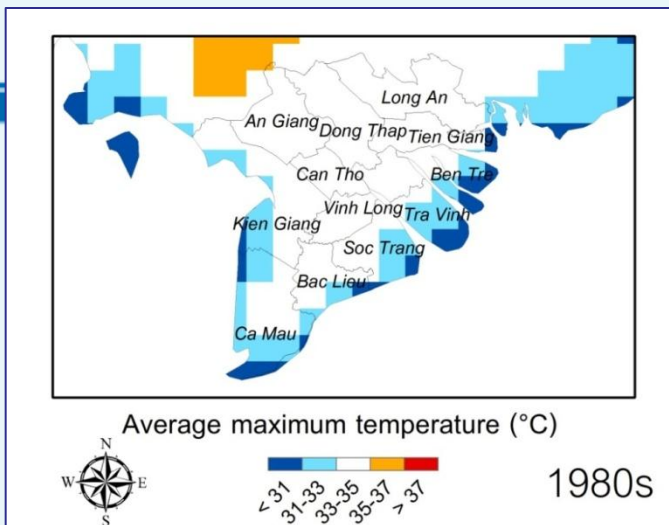
Results from regional climate model, regional hydrological simulation and ocean circulation model were then fed into hydrodynamic model, EIA 3D model, for more detailed hydrological analysis for the Mekong River floodplain system.



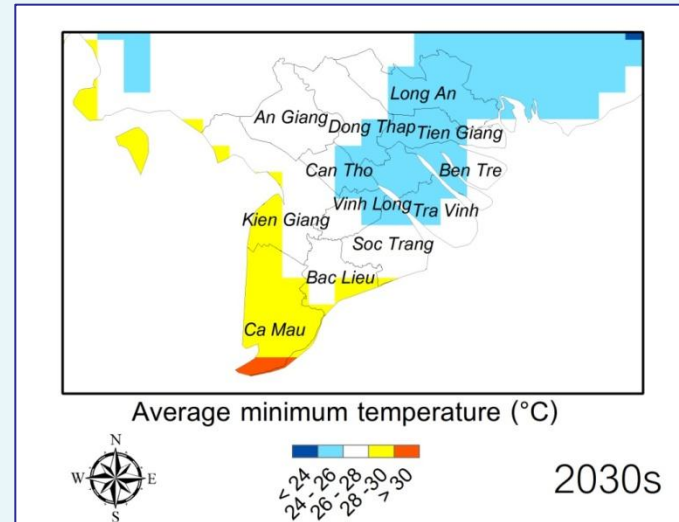
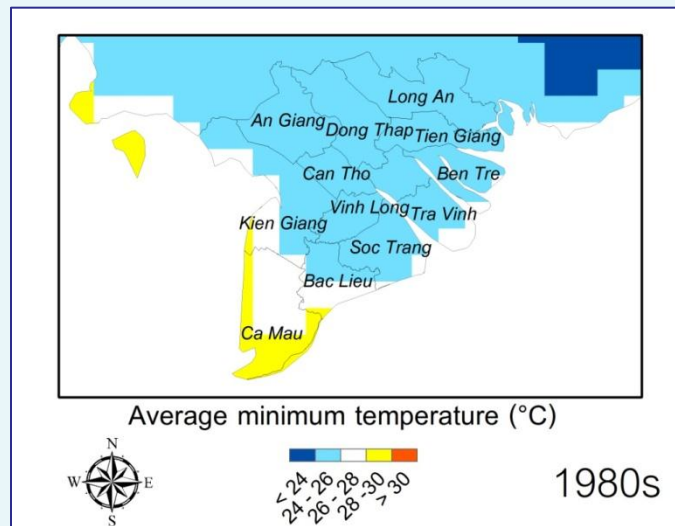
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2. CLIMATE CHANGE IN THE MEKONG DELTA

Average max.
temperature



Average min.
temperature

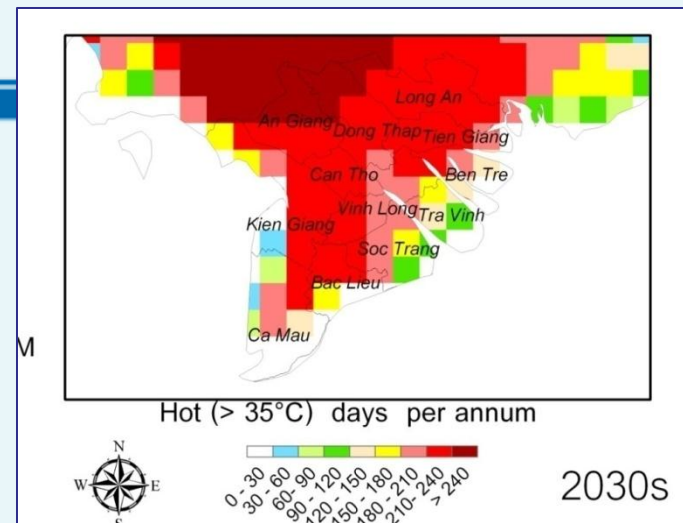
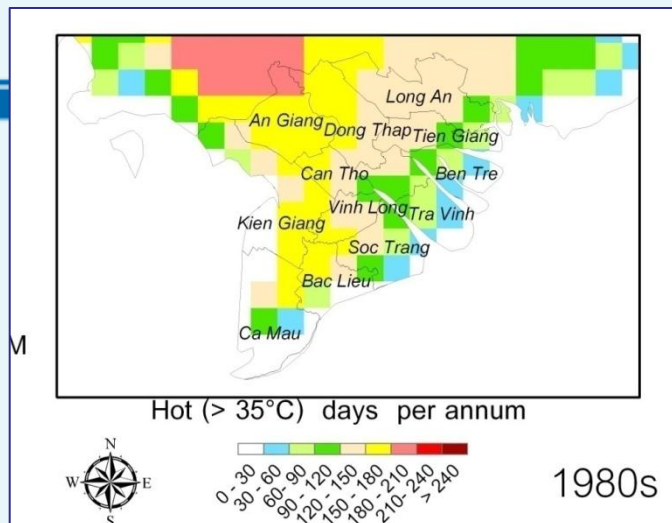




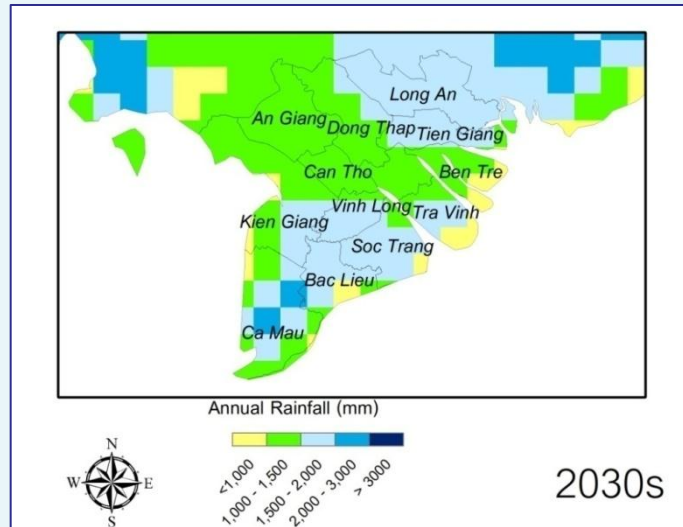
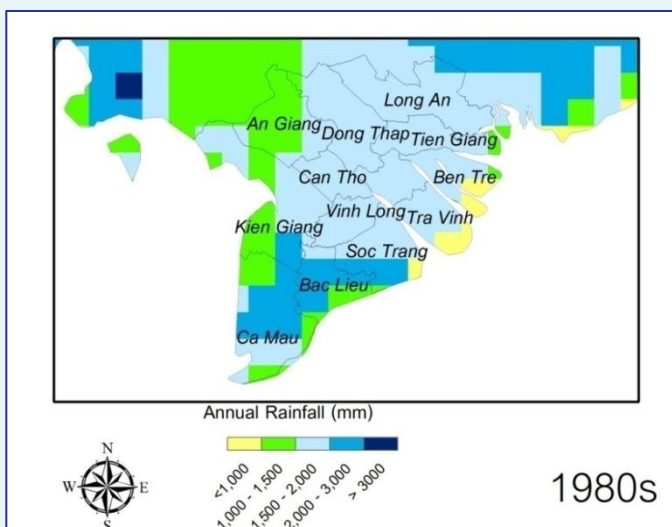
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2. CLIMATE CHANGE IN THE MEKONG DELTA

Number of hot days



Annual precipitation

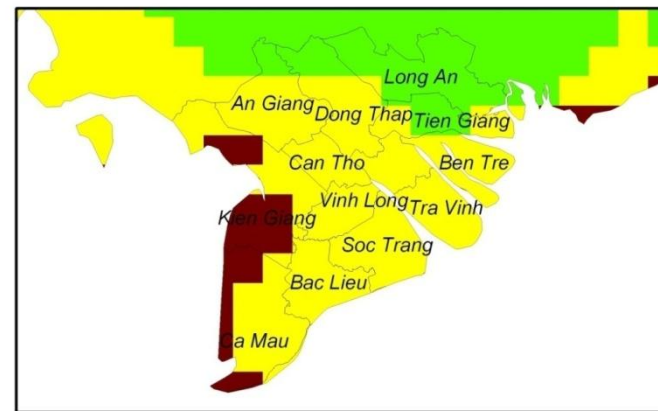




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2. CLIMATE CHANGE IN THE MEKONG DELTA

Change in annual precipitation

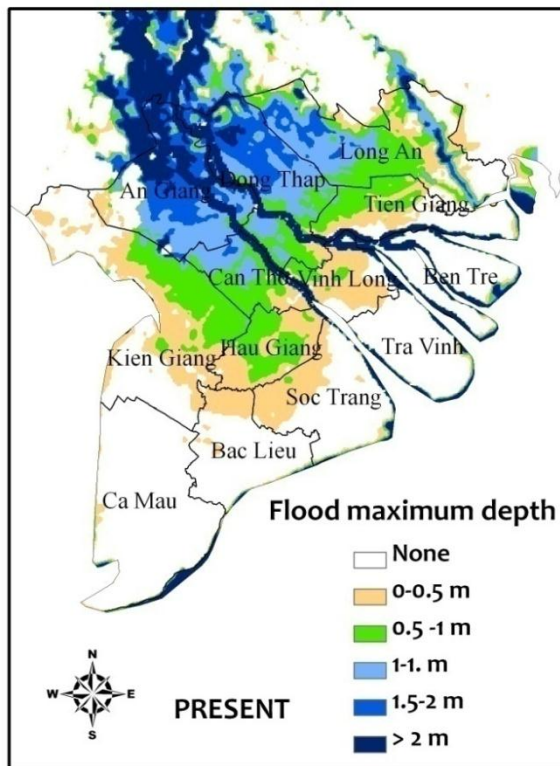


Change in annual rainfall in percentage



- Reduction > 20%
- Reduction 10-20 %
- Reduction < 10%

2030s

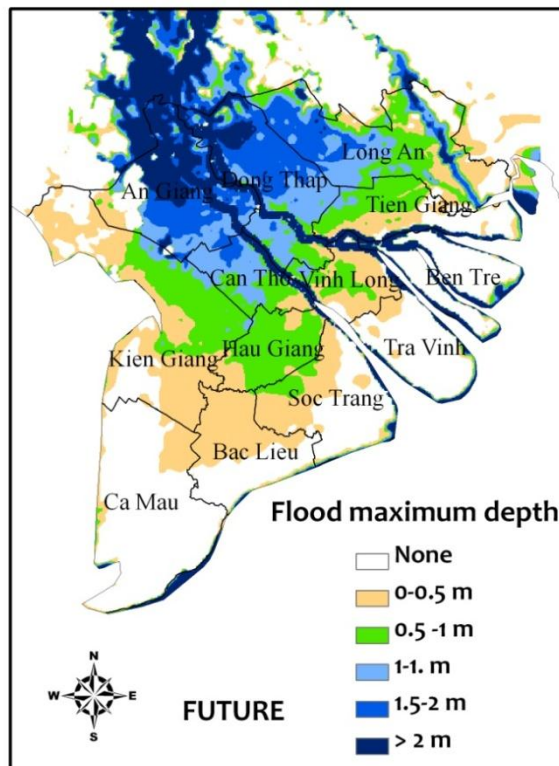


Flood maximum depth

- None
- 0-0.5 m
- 0.5-1 m
- 1-1.5 m
- 1.5-2 m
- > 2 m



PRESENT



Flood maximum depth

- None
- 0-0.5 m
- 0.5-1 m
- 1-1.5 m
- 1.5-2 m
- > 2 m



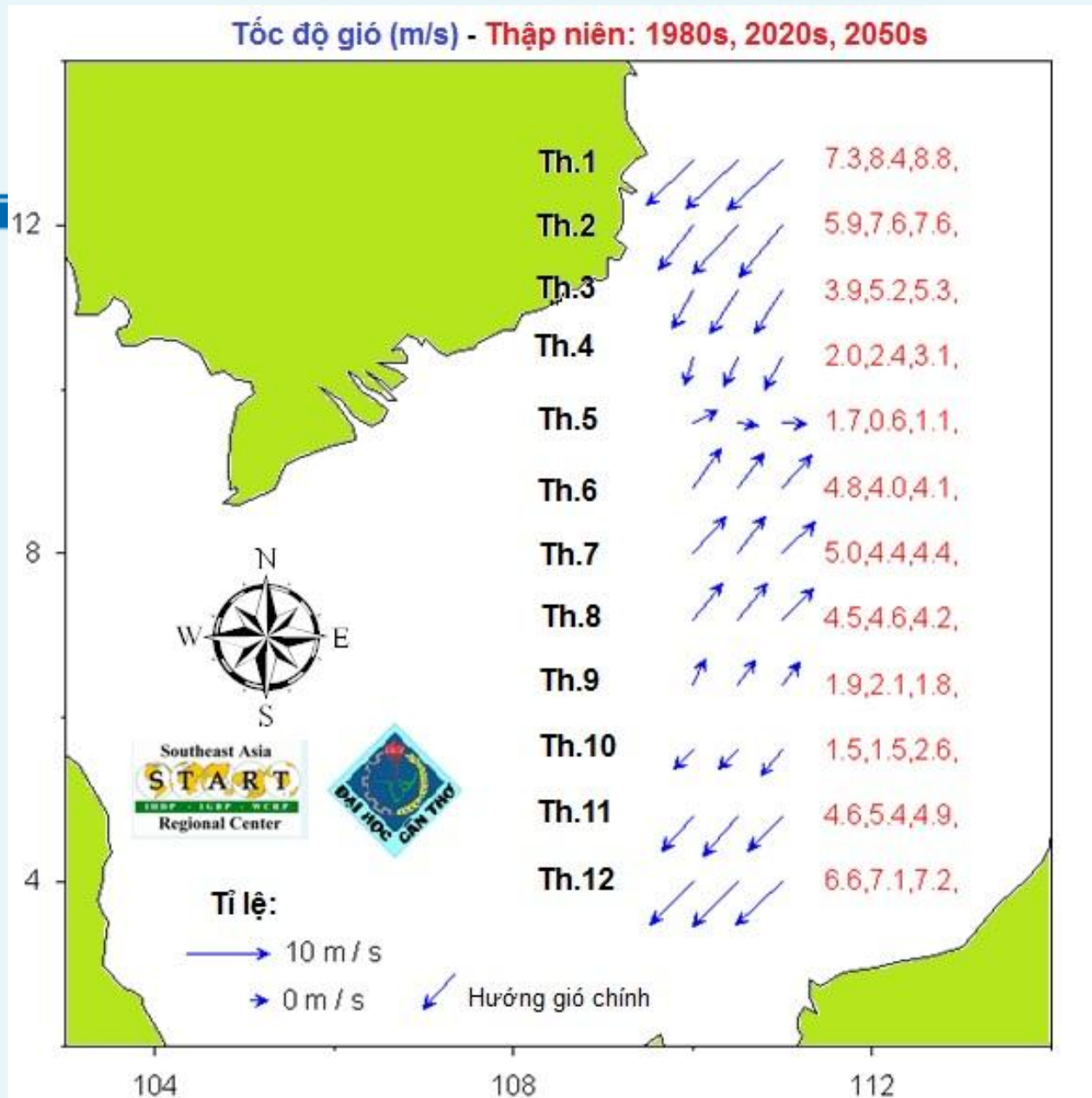
FUTURE

Flood boundary





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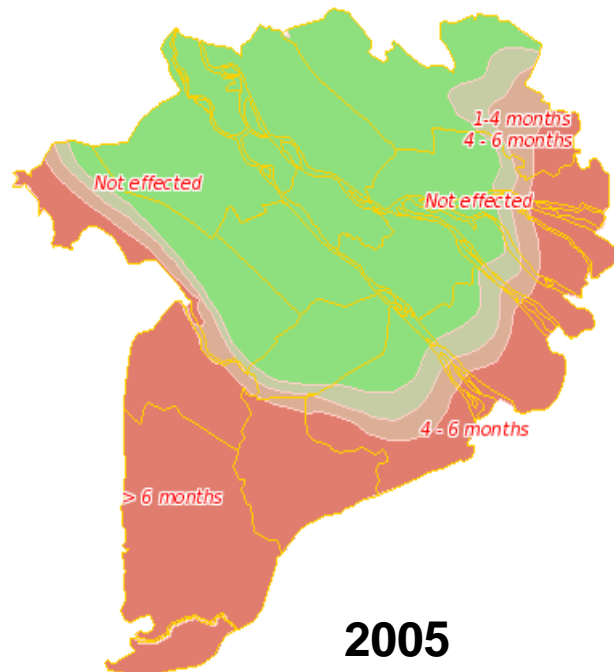
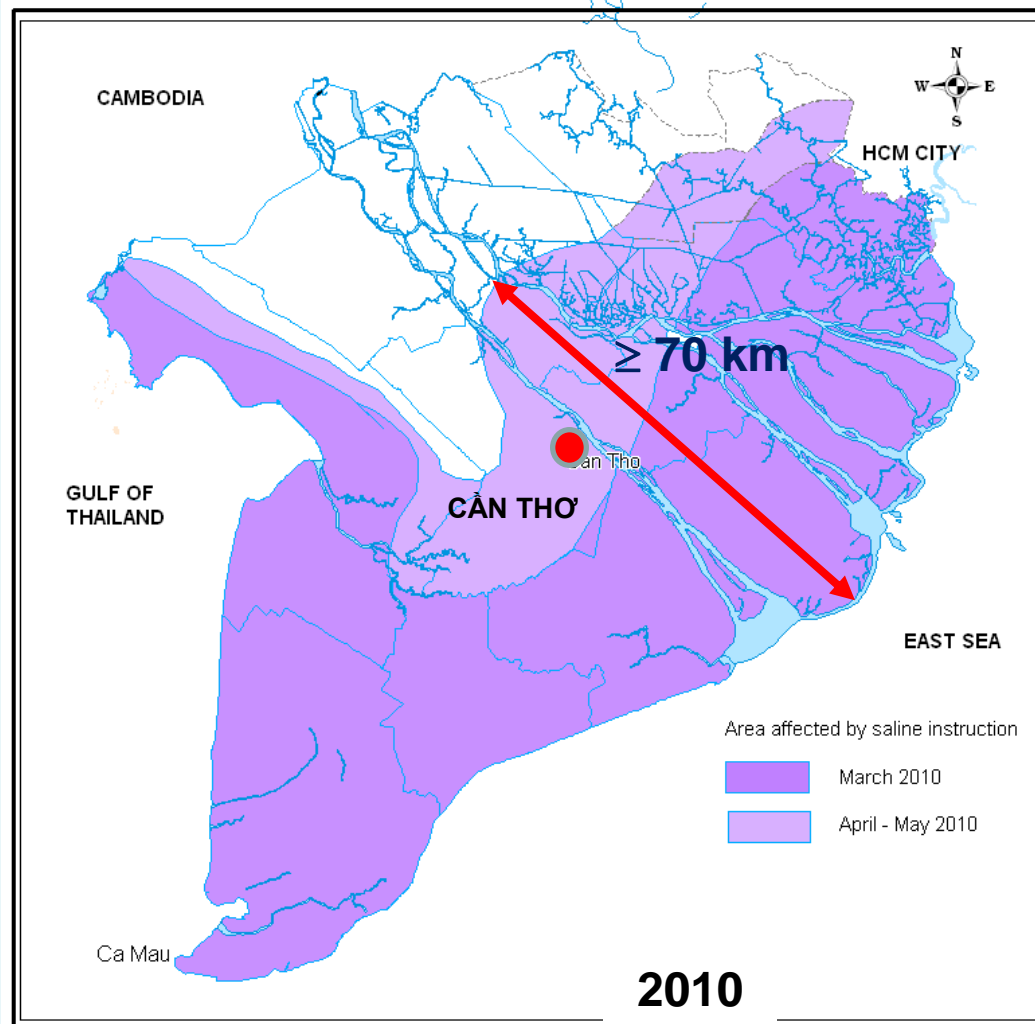


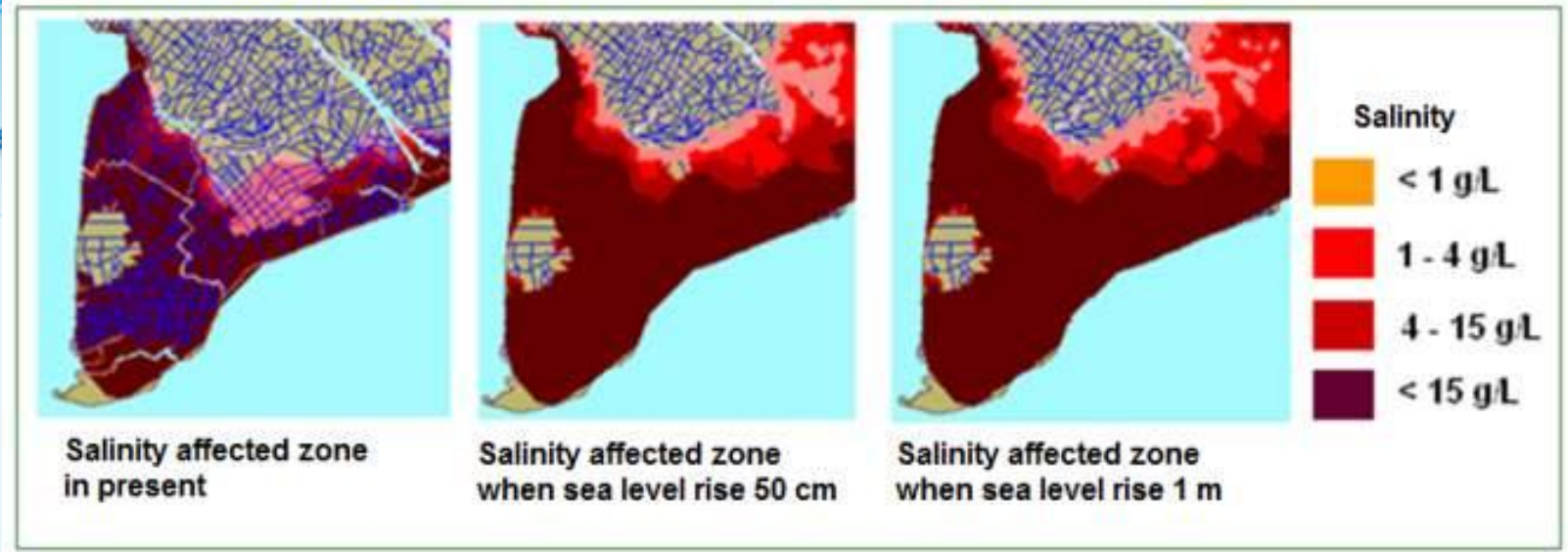


Low upstream flow leads the salinity intrusion to coastal areas more serious



AREA AFFECTED BY SALINE INTRUSION IN LOWER MEKONG BASIN, VIETNAM - 2010





(Source: SIWRP, 2008)

Saline intrusion will go deeper than to inland corresponding in sea level rise.

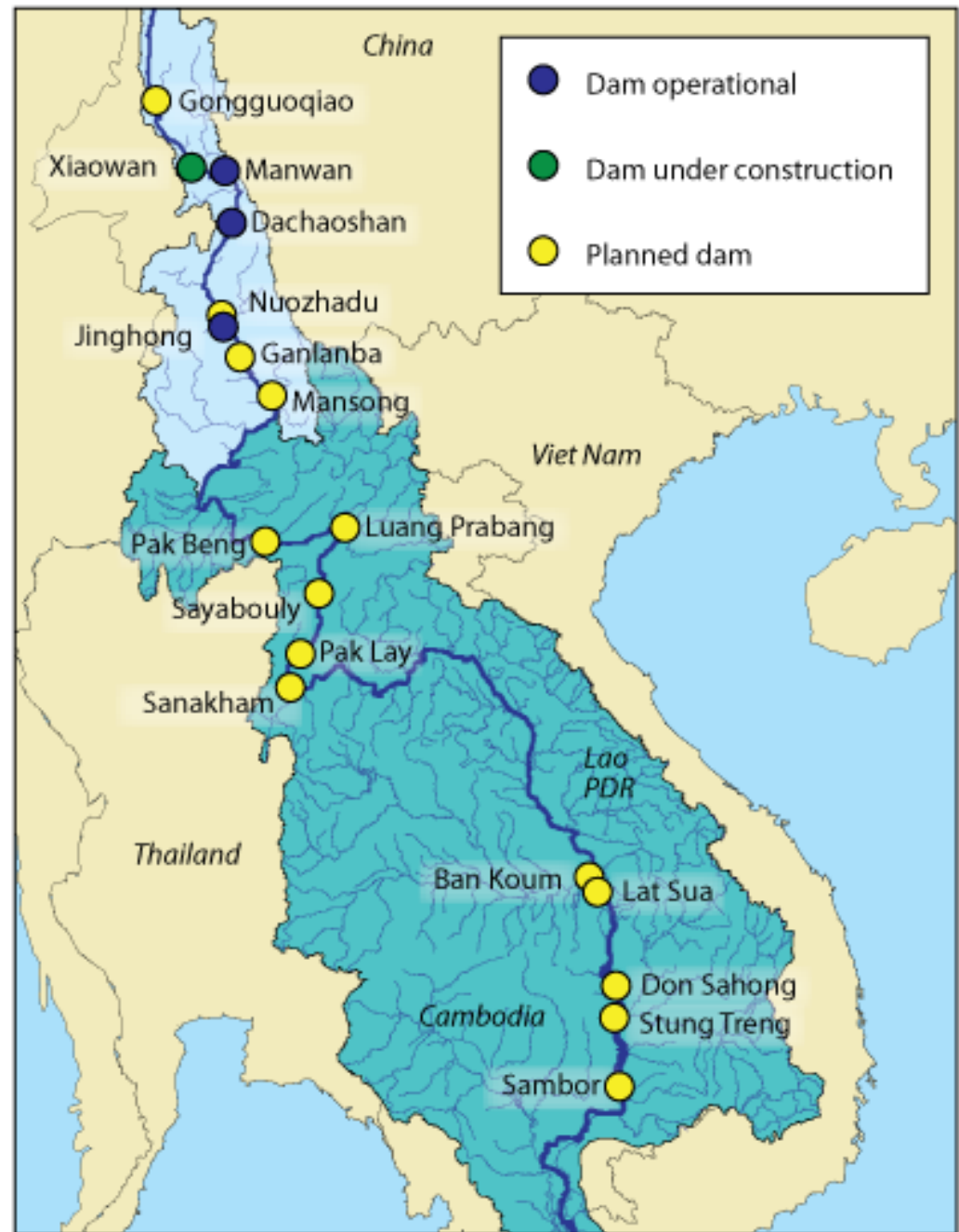
It is projected that in 2030s to be about 1.5 to 2.0% of the coastal area will be flooded due to sea level rise.

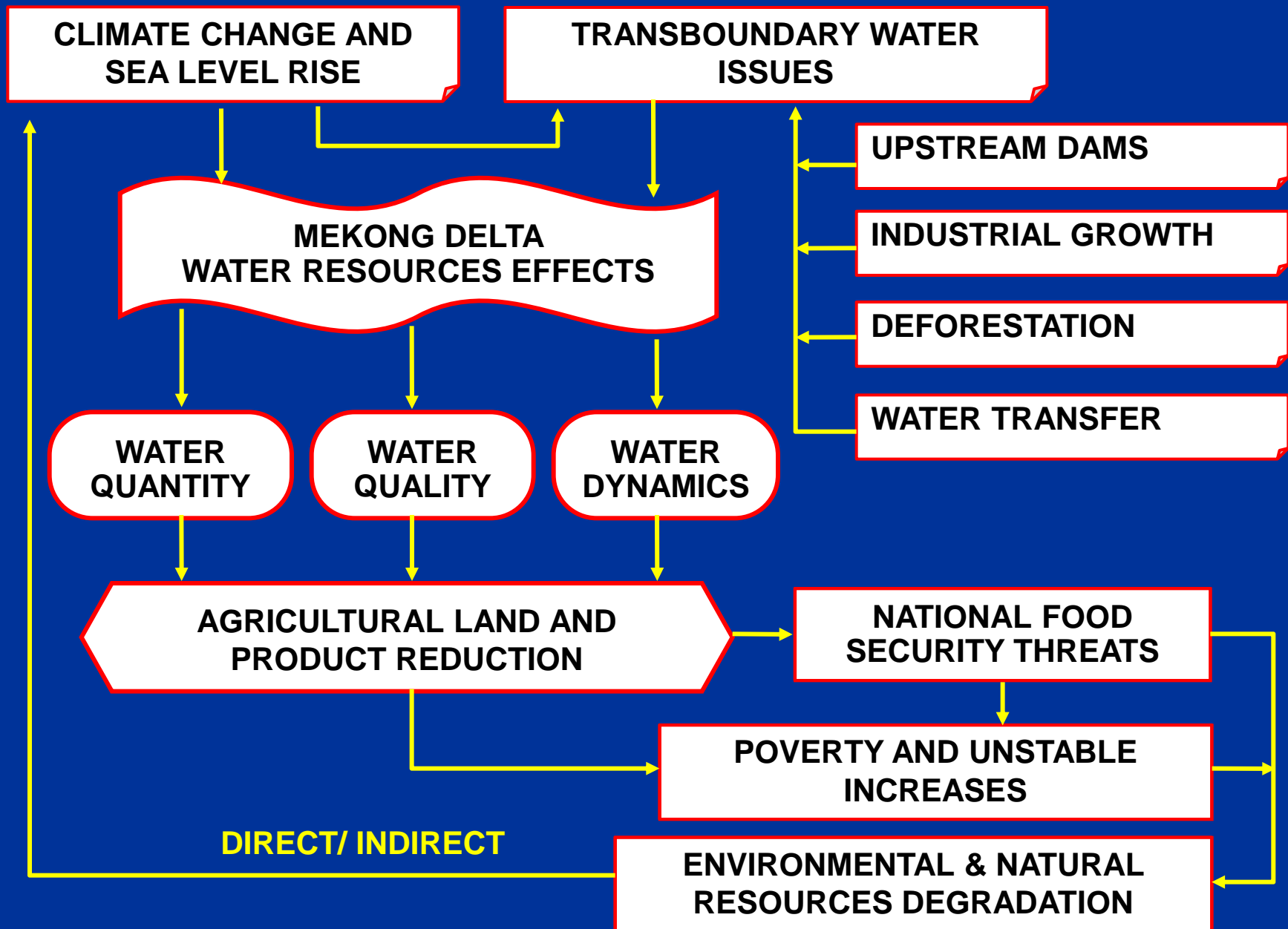


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Effects of Dams in Upstream to Lower MD

**Dam construction will
displace thousands and alter
flood cycles and sediment
levels downstream where
millions people fish and farm**







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Climate trends	Trends
Dry duration prolonged	↗
Wet duration shorted	↘
Annual mean temperature	↗
Heat waves	↑
Precipitation in critical season	↘
Abnormal rainfall in wet season	↗
Upstream floods	↓↑
Sedimentation	↘
River bank erosion	↑
Drought	↗
Abnormal strong wind (Whirlwind)	↗



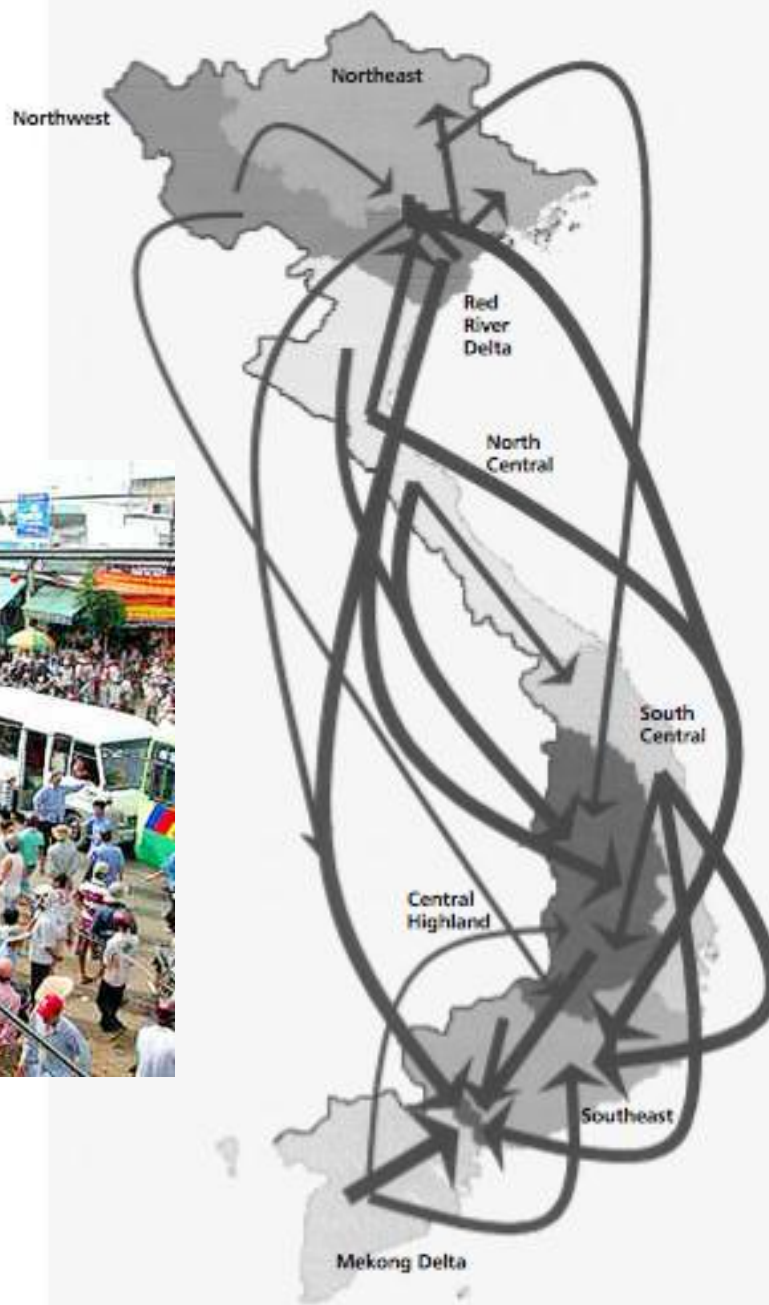
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Vietnam's Migratory Patterns:

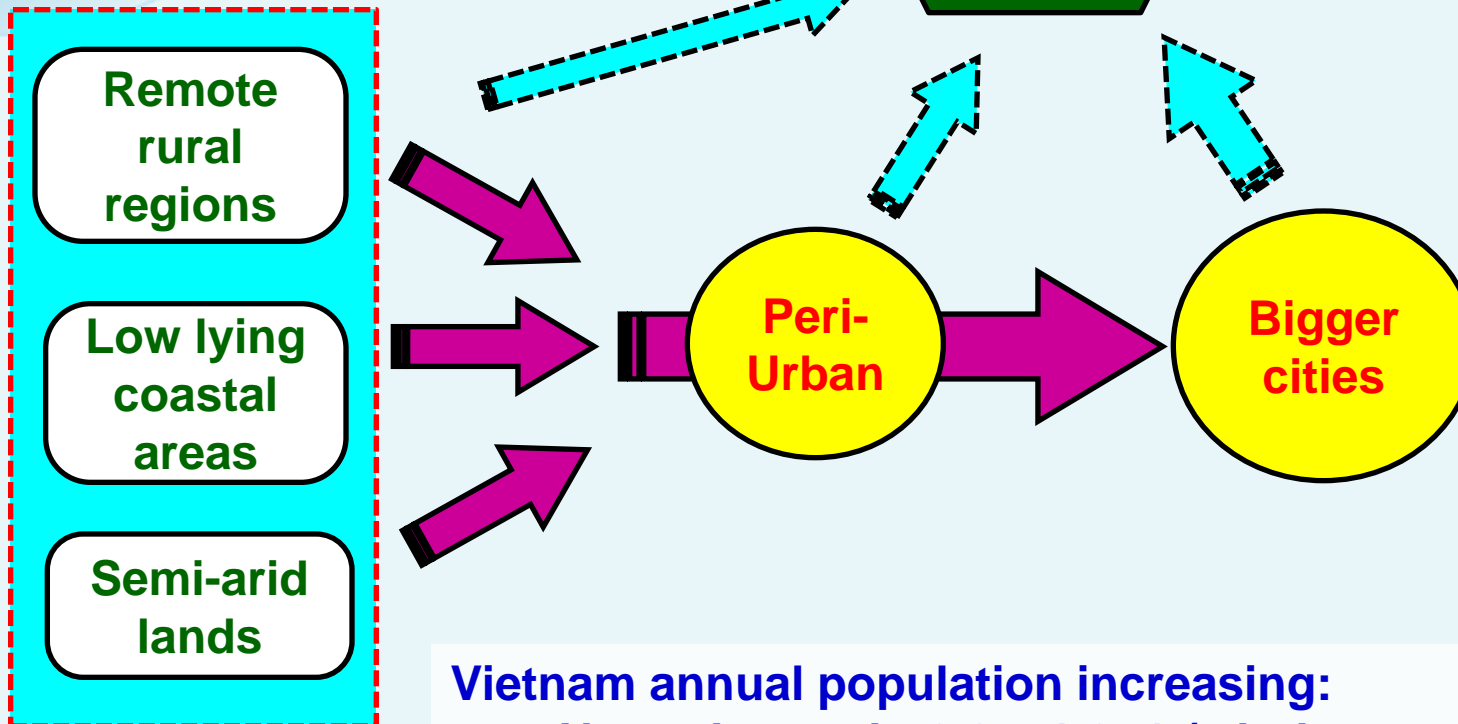
- Highlands to Lowlands
- Northern to Southern regions
- Rural to Urban areas



(Source: Oxfam Hong Kong, 2009)



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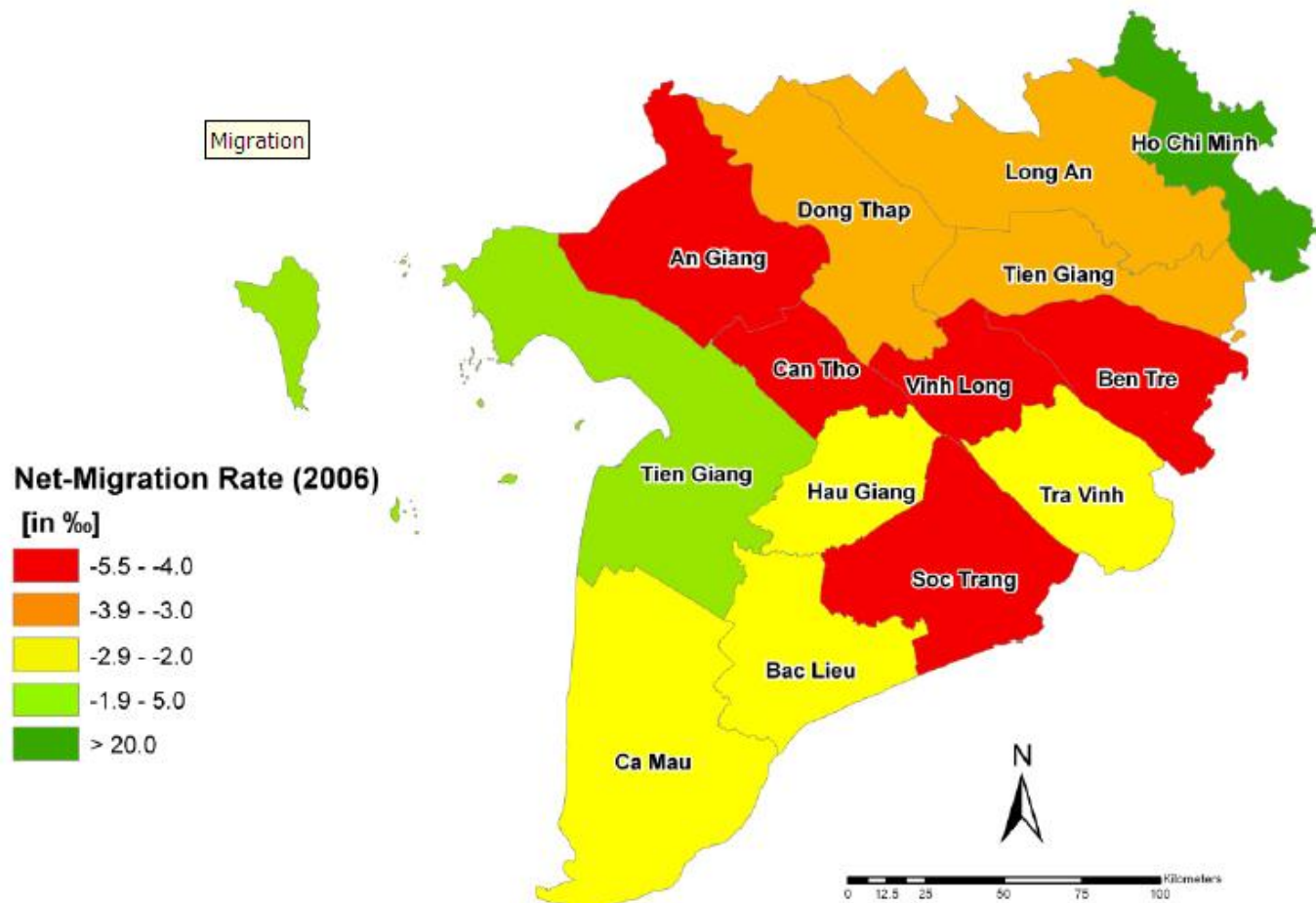
Vietnam annual population increasing:

- Normal growth: 0.8 – 1.0 % (whole country)
- Mechanical growth: 2.4% (cities) and 3-4 % (big cities) (Uncontrolled migration)



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Net-Migration Rate in the Mekong Delta Provinces and Ho Chi Minh City in 2006



Data Sources:
The 2006 Population Change, Labour Force and Family Planning Survey (GSO 2007)



WISDOM
A GERMAN - VIETNAMESE
INITIATIVE

Source: Figure by author; estimated from: GSO 2007b.



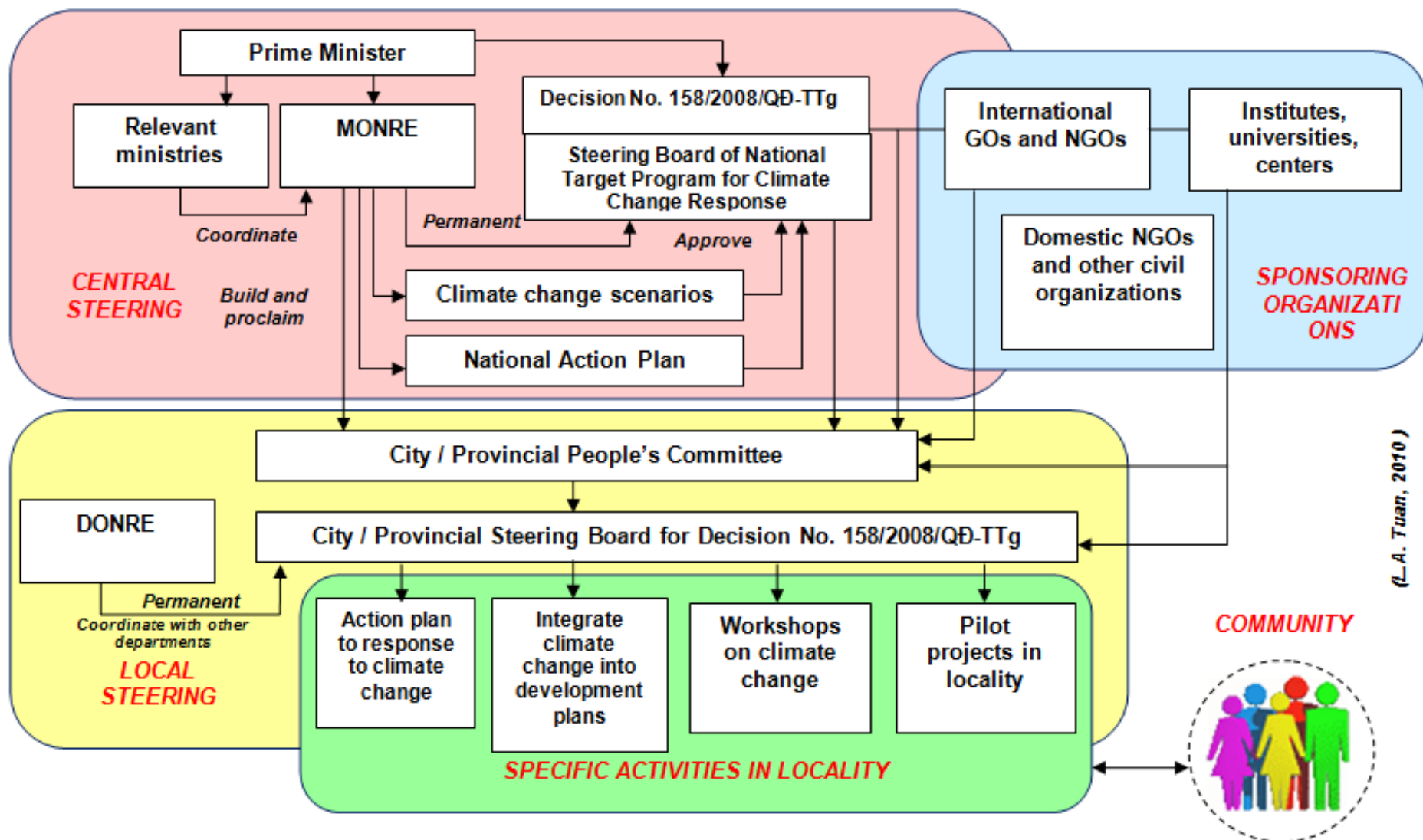


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VIETNAM GOVERNMENT'S CLIMATE CHANGE INSTUTIONAL STRUCTURE





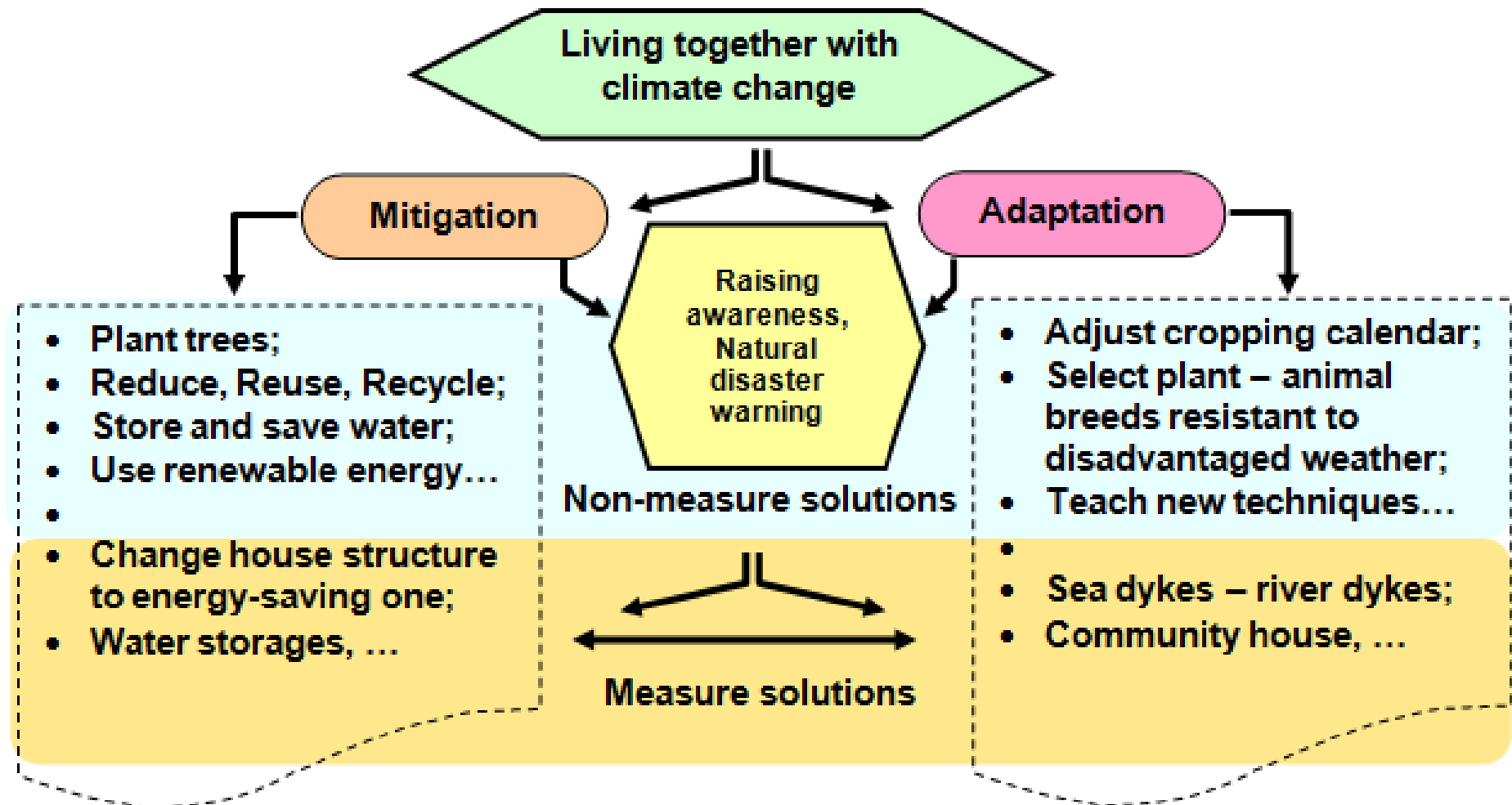
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THE MEKONG RIVER DELTA

... from “Living together with floods”

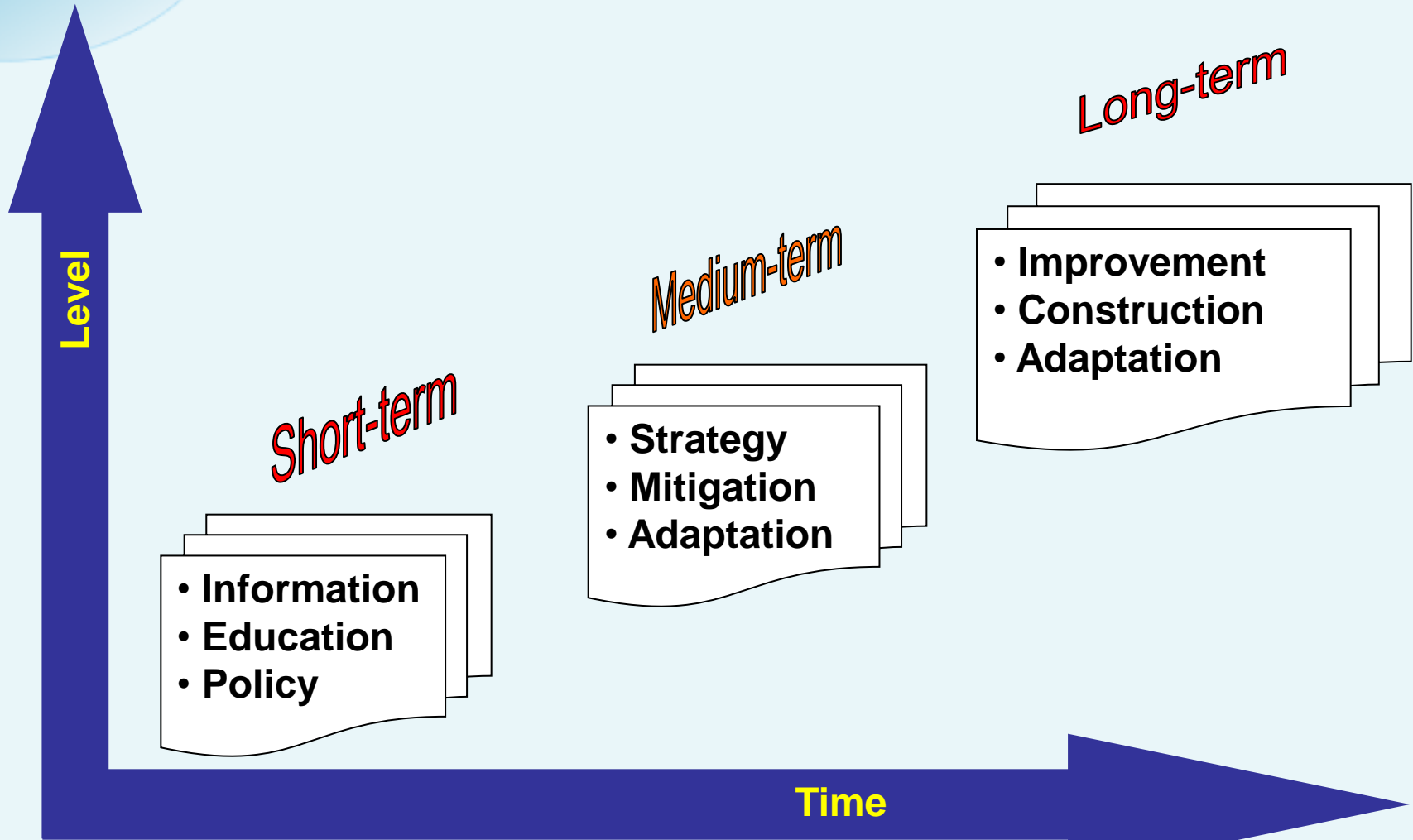
... to “Living together with climate change”







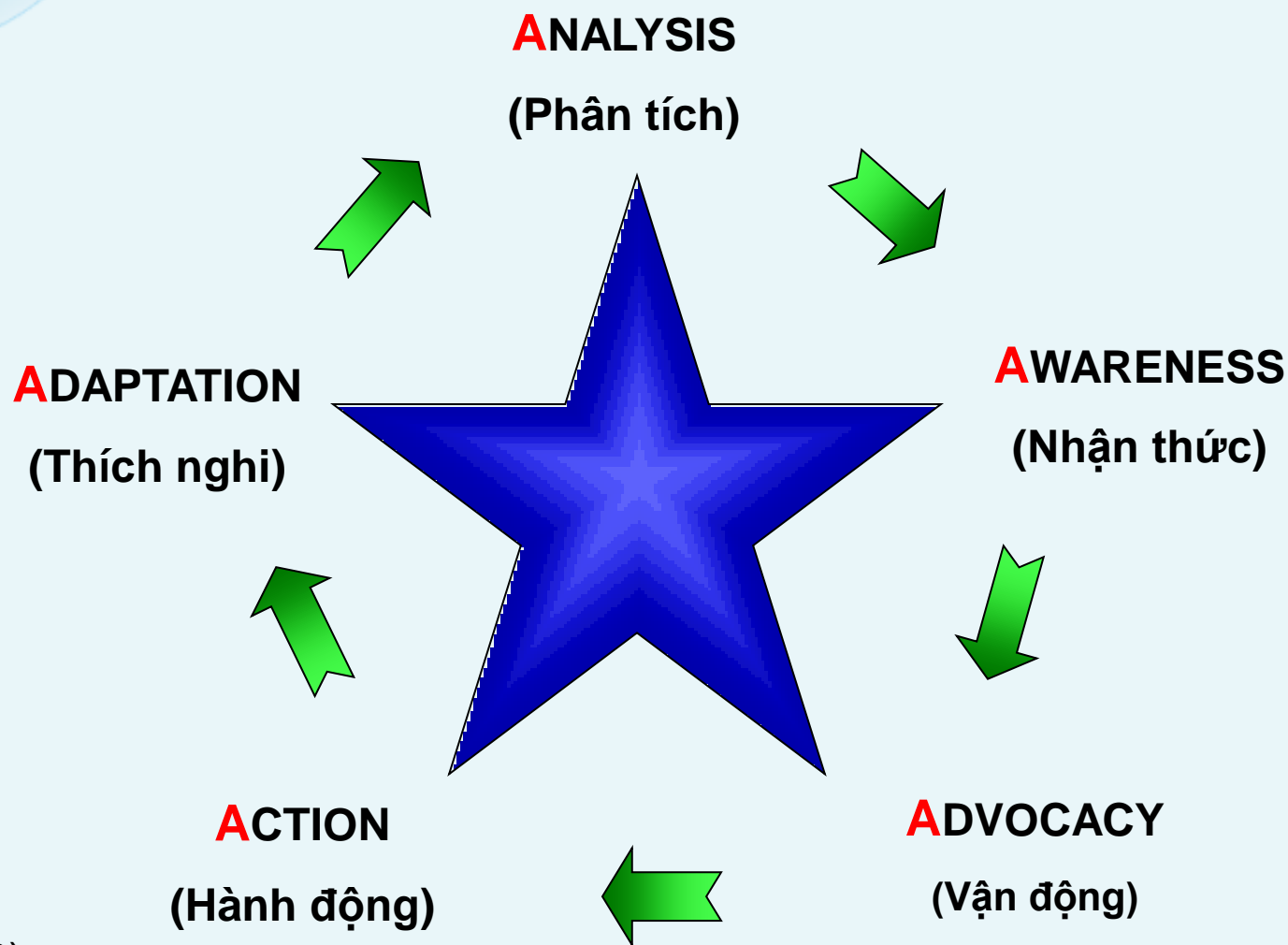
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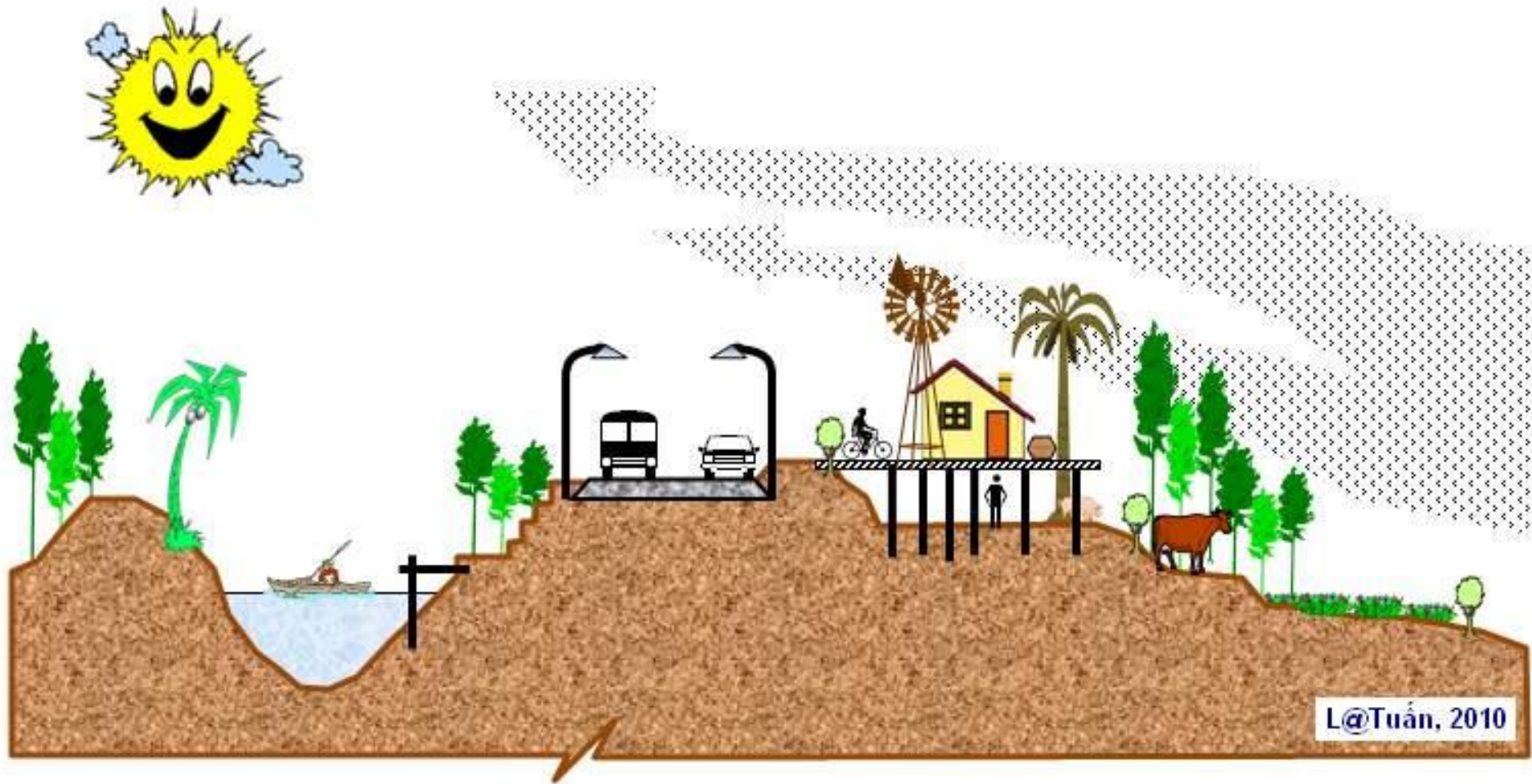
5A approach for coping with climate change



(Tuan, 2009)



Response to climate change for our sustainable future



Thanks for your attention