

Thailand Country Report On Disaster Management

Asian Forum On Disaster Management
and Climate Change Adaptation

22- 25 April 2009

JICA Hyogo International Center

JAPAN

Outline

- Overview of Disaster Management in Thailand
- Strengthening the Capacity of Disaster Prevention and Mitigation
- International and Regional Networks
- Conclusion



Overview of Disaster Management in Thailand



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1. Disaster Information
2. Disaster Management Mechanisms
3. Thailand and Climate Change

1. Disaster Information

- Natural Disaster: Flood/Flash flood, Land slide/Mud slide, Drought, Storm, Forest fire, Earthquake etc.
- Man-made Disaster: Transportation accident, Fire, Chemical and Hazmat Disease Epidemic, etc



Summary of Natural Disaster during 2003 - 2007

Dis_subtype	No.Event	No. Killed	No.Injured	No.Affected	Cost of damage(us)
Flood	60	629	1,492	15,457,984	48,224,742
Drought	0	0	0	54,092,975	246,412,539
Tsunami	1	8,345	8,457	58,550	49,944,309
Storm	12,476	199	607	352,370	38,043,133



Source: www.disaster.go.th

Summary of Manmade Disaster during 2003 - 2007

Dis_subtype	No.Event	No. Killed	No.Injured	No.Affected	Cost of damage(us)
Transportation accident	566,655	65,834	430,692	na	na
Fire	9,188	217	526	71,113	112,689,050



2. Disaster Management Mechanisms

2.1 Disaster Management Structure

- Policy Level : National Disaster Prevention and Mitigation Committee
- Command and Control Level
- Operation Level

2. Disaster Management Mechanisms

2.2 Disaster Prevention and Mitigation Plan

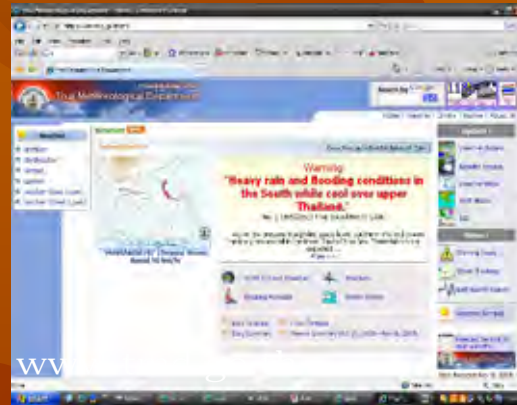
- Nation Disaster Prevention and Mitigation Plan
- Master Plan for Disaster Sub_type

3. Thailand and Climate Change

- Ratified UNFCCC on 28 th December 1994 and the Kyoto Protocols in August 2002
- Set up National Committee on Climate Change and the National Clean Development Mechanism (CDM) steering committee
- Formulated the strategy of climate change(2008 - 2012)

Strengthening the Capacity of Disaster Prevention and Mitigation

■ Early Warning System



Manual Siren



- National and Regional Exercise



Strengthening the Capacity of Disaster Prevention and Mitigation

- **Strengthen Community**
- **Increase Capacity of Local Authority**
- **Building Capacity Civil Defence Volunteer**
- **Enhancing Education and Public Awareness**



International and Regional Networks

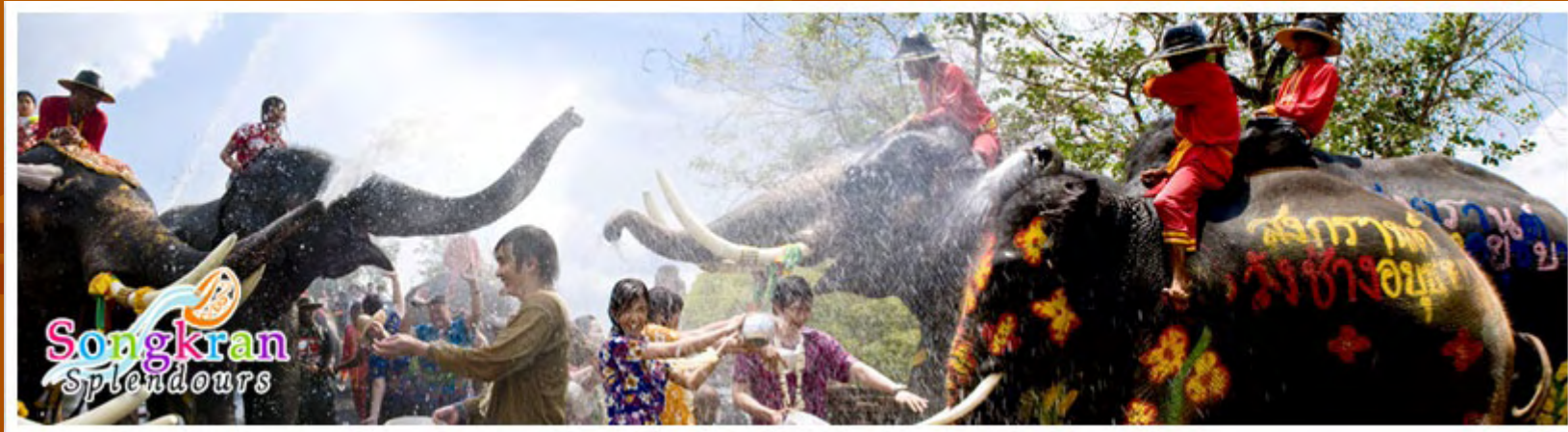


- Information Sharing
- Know-how / Technology Transfer
- Technical Cooperation

Conclusion

- Disaster Risk Reduction
- Regional Disaster Cooperation

Thank you





**THE NATURAL DISASTER
AND MITIGATION
MEASURES IN VIET NAM**

MAIN PARTS

PART I: INTRODUCTION

PART II: DAMAGE CAUSED BY DISASTER

PART III: FLOOD CHARACTERISTICS IN VIETNAM

PART IV: CLIMATE CHANGE IMPACTS ON AGRICULTURE
AND RURAL

PART V: STRATEGIES AND MEASURES FOR NATURAL
DISASTER MITIGATION IN VIETNAM

PART VI: BASIC LEGAL FOR DISASTER PREVENTION
AND MITIGATION.

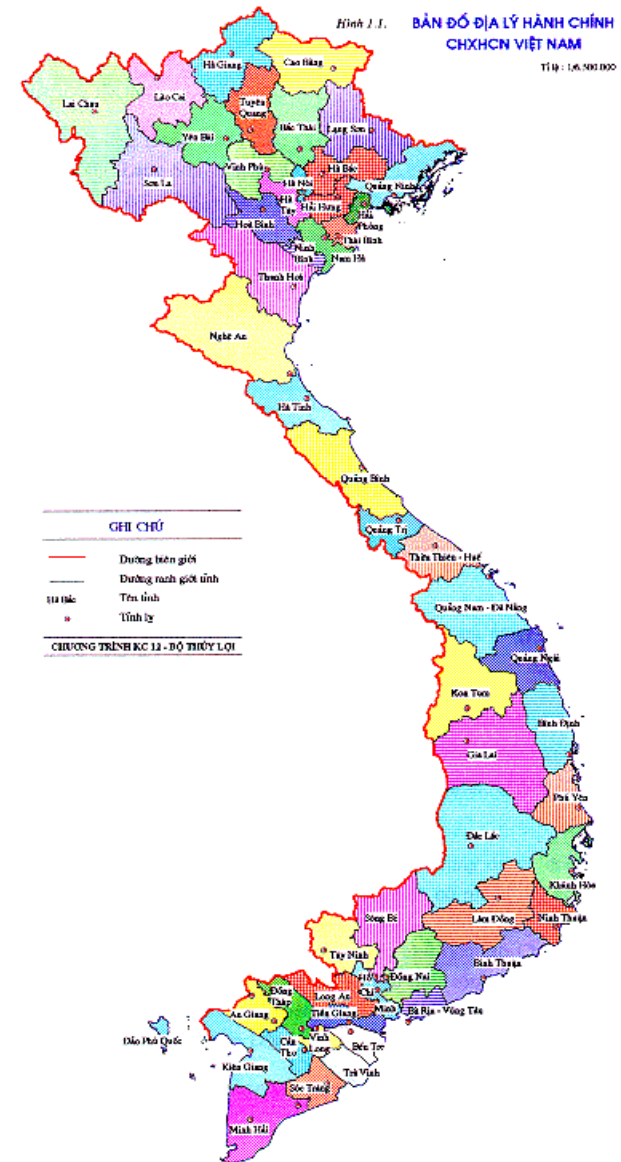
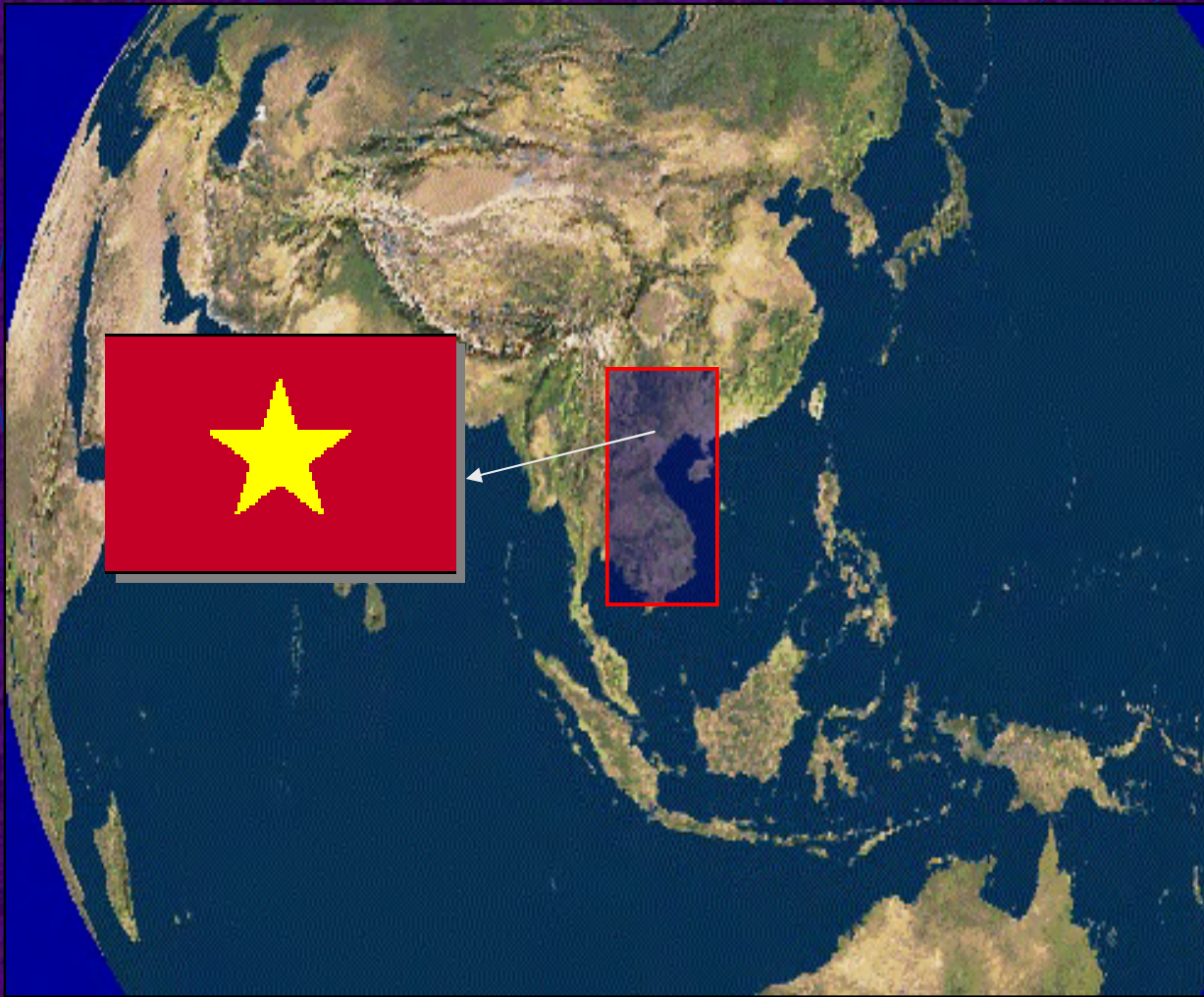
PART VII: THE DISASTER PREVENTION PROJECTS

PART VIII: THE DISASTER PREVENTION PROJECTS

PART IX: LESSONS LEARNED FROM MAJOR DISASTERS.

PART X: CONCLUSION AND RECOMANDATIONS

Vietnam





PART I: INTRODUCTION

Country background (2007)

Area	331,211 km²
Population	85.154 million
Population Density	257 peoples/km²
Percent Urban	27.44%
Percent Rural	72.56%
Gross Domestic Product	71,104 billion US\$
Per Capita Income	835 US\$ (2007)

COUNTRY BACKGROUND

- Viet Nam is located in South-East Asian with total land area of 333,000 km² and coastline of 3200 km
- Viet Nam has 14 major river systems including 02 large international river basin:

Red River in the North

Mekong River in the South

- Viet Nam is effected annually by water-related disaster:

Flooding

Typhoon

Drought

Landslide

Storm Surges

Flashflood and other Natural Disaster

NATURAL DISASTER IN VIET NAM

Natural Hazards in Vietnam

Relative Frequency

High

Medium

Low

Flood

Typhoon

Inundation

Tornado

Hail rain

Drought

Landslide

Fire

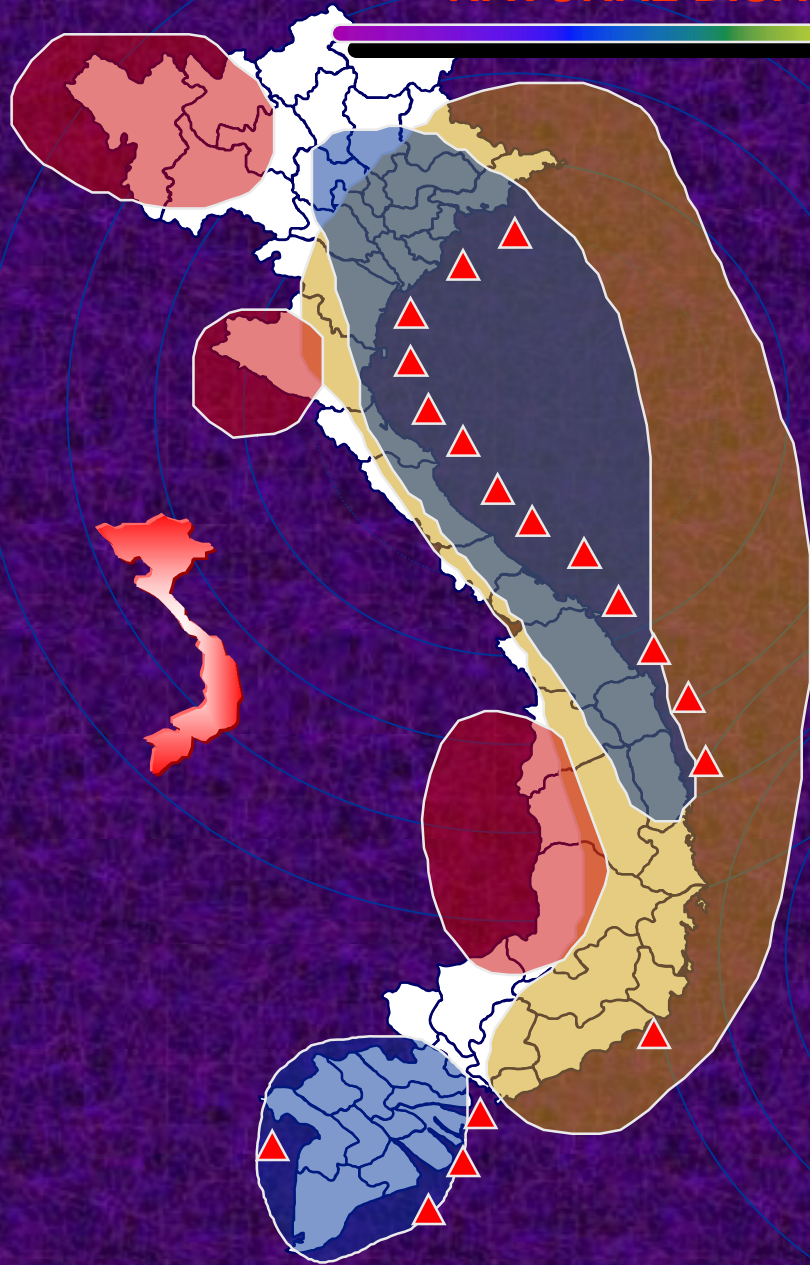
Deforestation

Earthquake

Accident (technology)

Frost

NATURAL DISASTER IN VIET NAM



 River Flooding

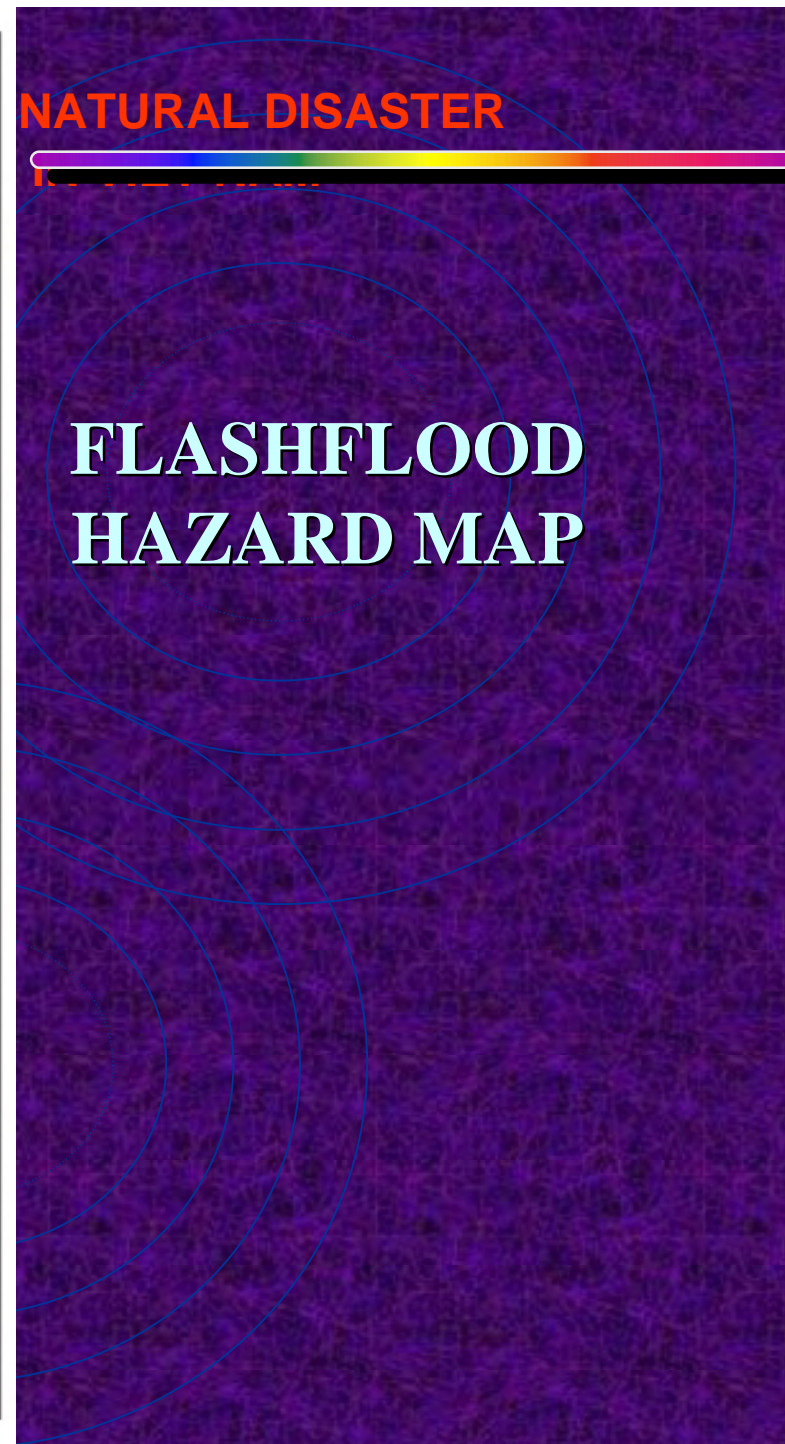
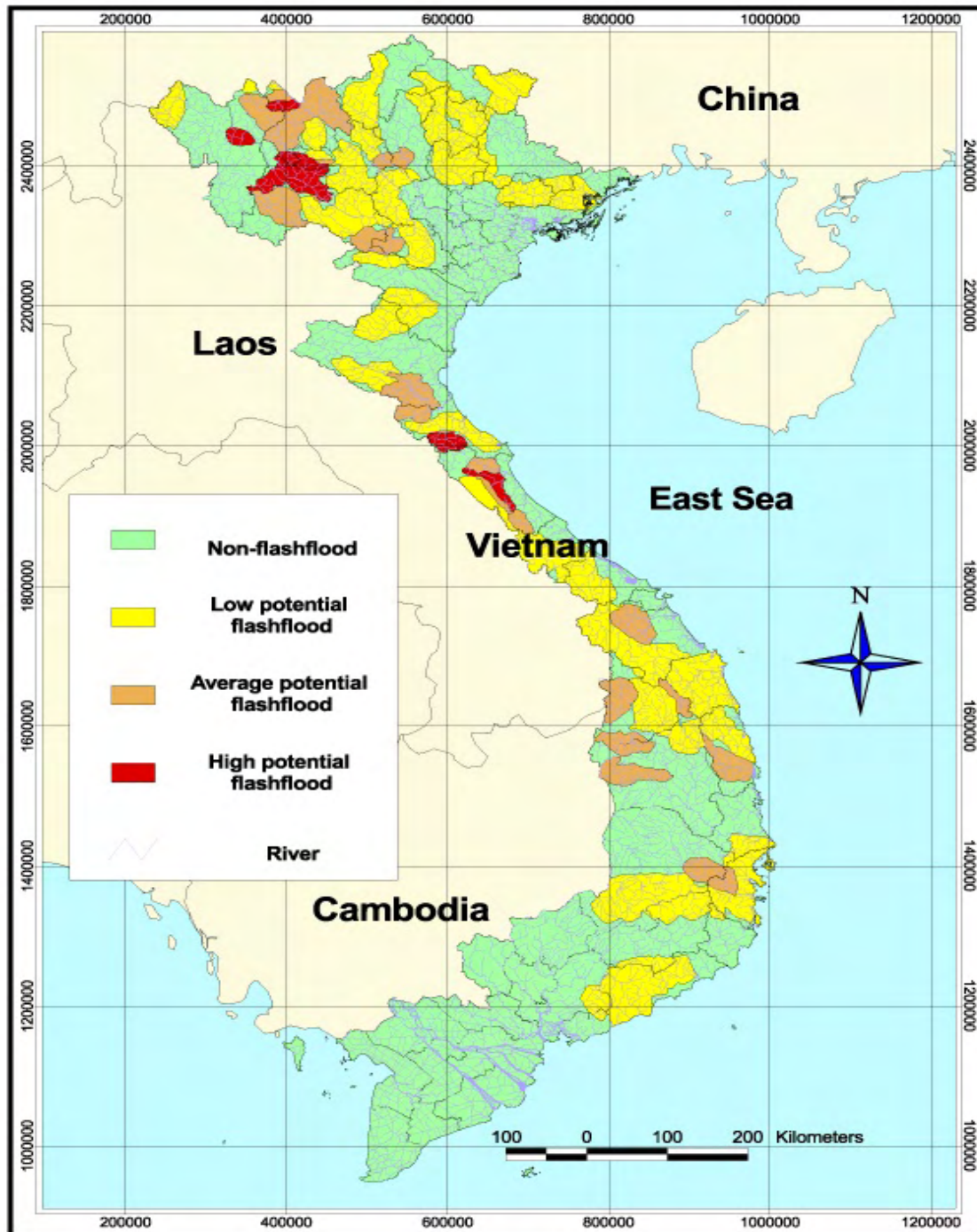
 Flash floods

 Typhoons

 Storm Surges

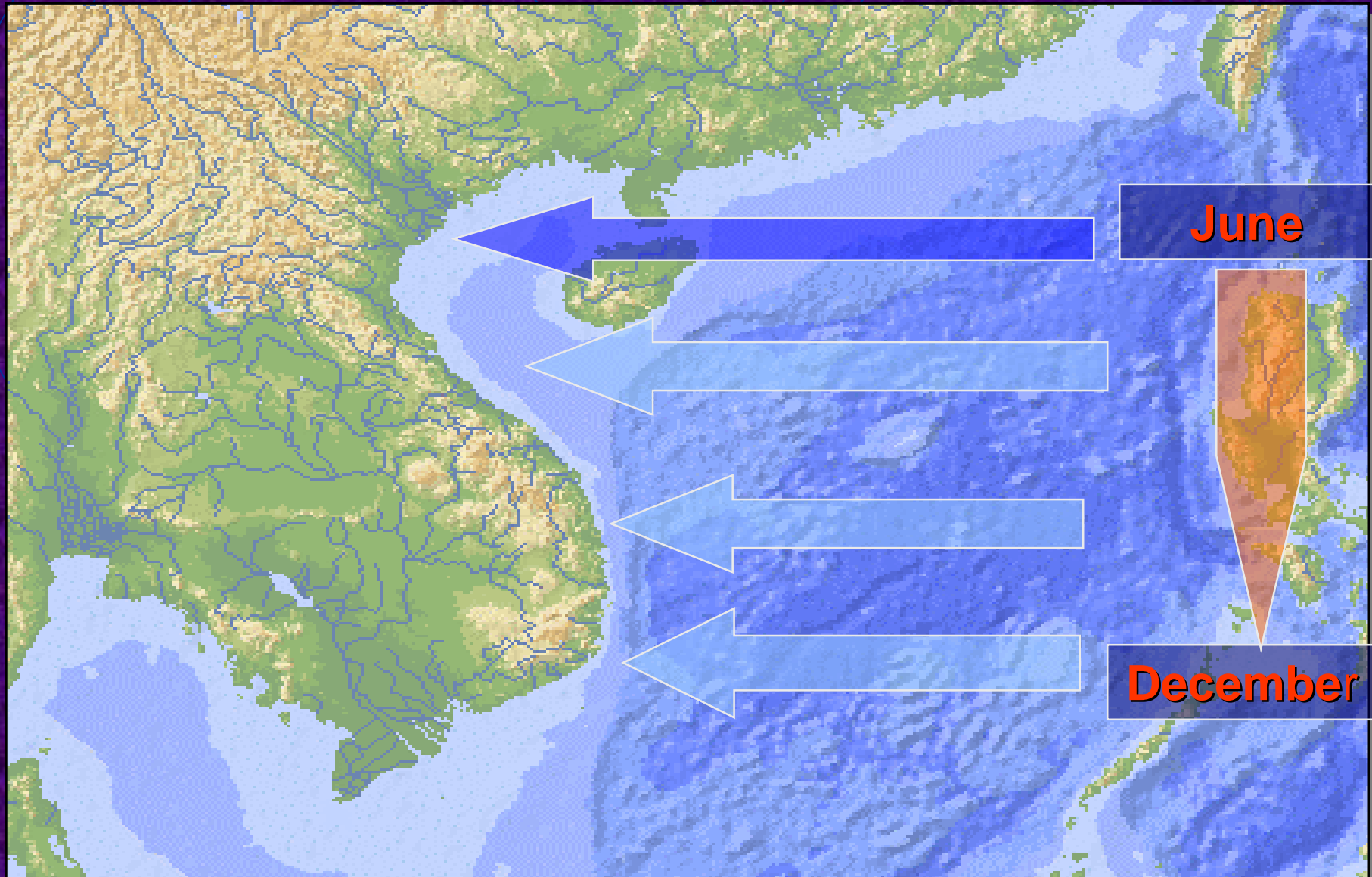
Not on map:

- Droughts
- Salt water intrusion
- Forest fire



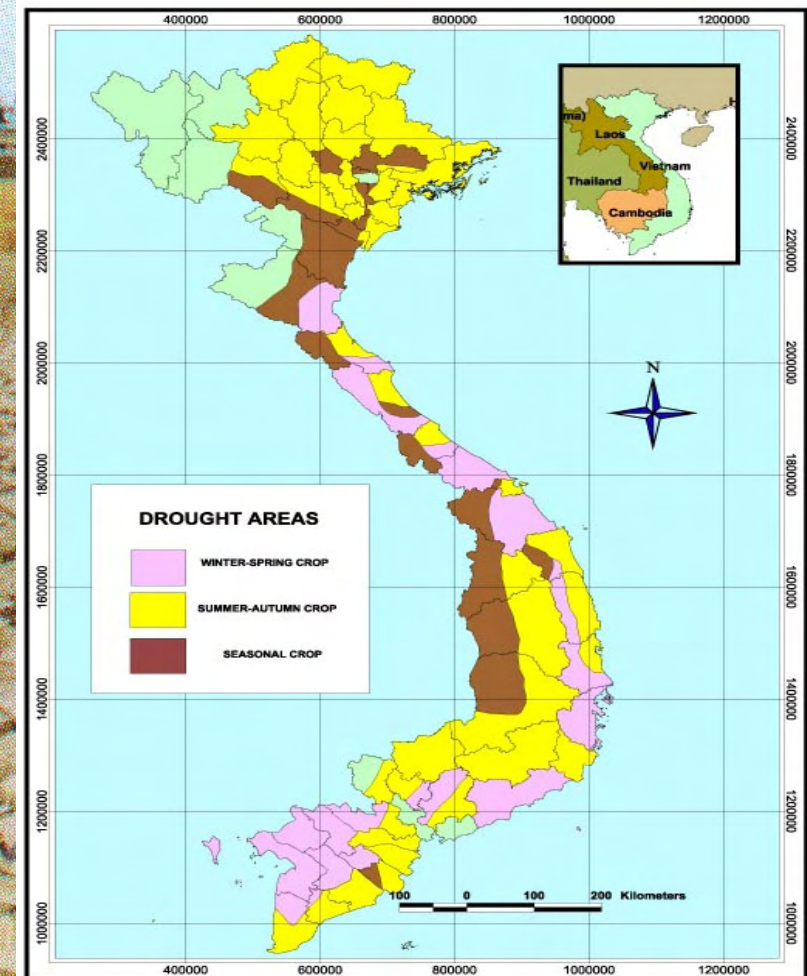
NATURAL DISASTER IN VIET NAM

Typhoon Tracks



NATURAL DISASTER IN VIET NAM

Drought took place on the whole country in 1998



PART II: DAMAGE CAUSED BY DISASTER

- SOME SERIOUS DISASTER
- DISASTER DAMAGE

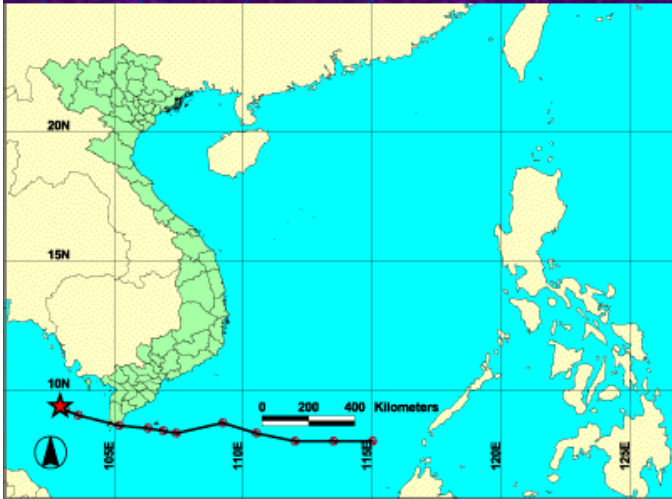
SOME SERIOUS DISASTER (1990-2001)

- **Lin Da Storm 1997**
- **Flashflood in Lai Chau Province**
- **Flooding in Central Vietnam 1999**
- **Flooding in MeKong River 2000, 2001.**

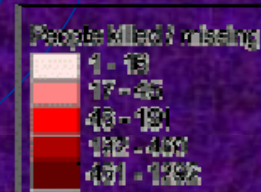
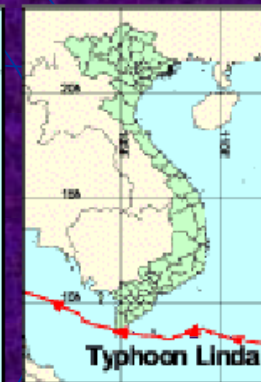
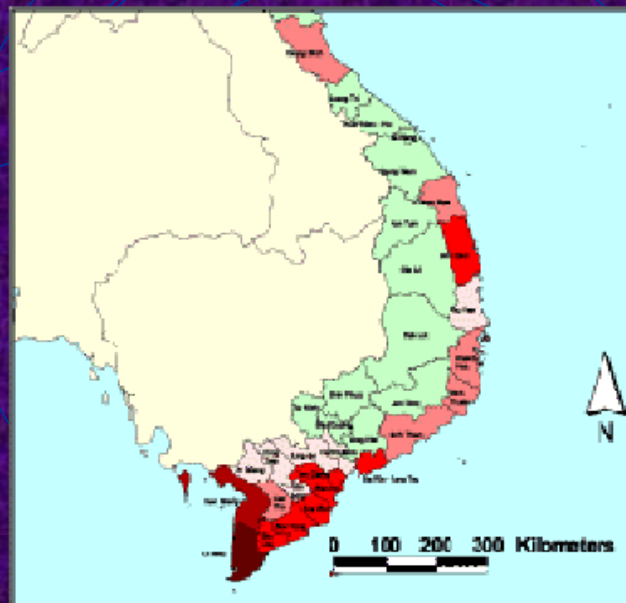
SOME SERIOUS DISASTER

Linda Storm (2 Nov. 1997)

On the night of 02 November 1997, the center of Typhoon Linda hit the southern tip of Vietnam (the area from Bac Lieu Province to Ca Mau Province) with wind velocities of 75 to 102 km/h (Beaufort Scale 9 to 10). Thereafter, on 03 November 1997, Typhoon Linda moved to the West and Northwest, away from Viet Nam towards the West of the Gulf of Thailand, at a speed of 20 km/h.



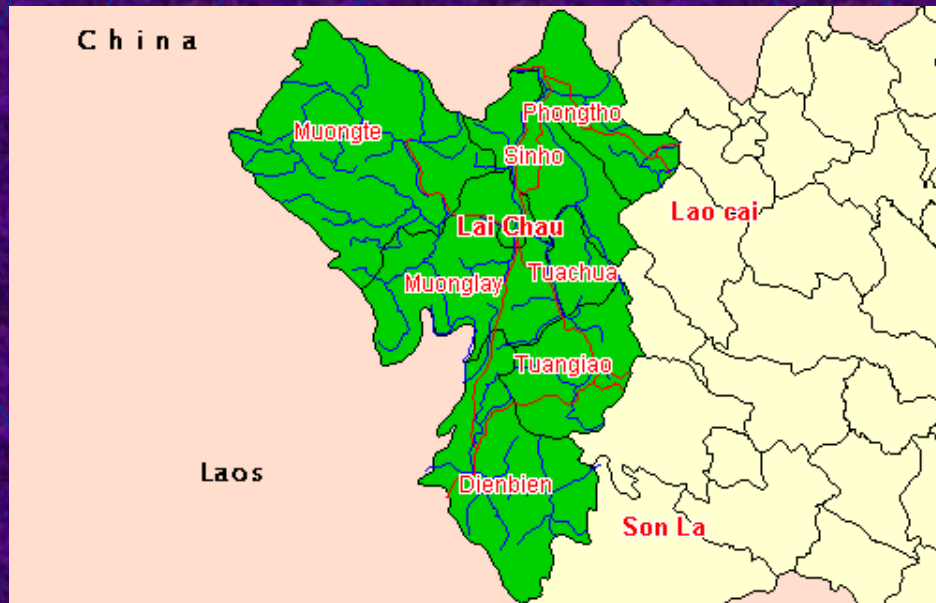
Peoples killed: 778
Peoples missing: 2123
Peoples injured: 1232
Total Economic losses:
593 Mil. US\$



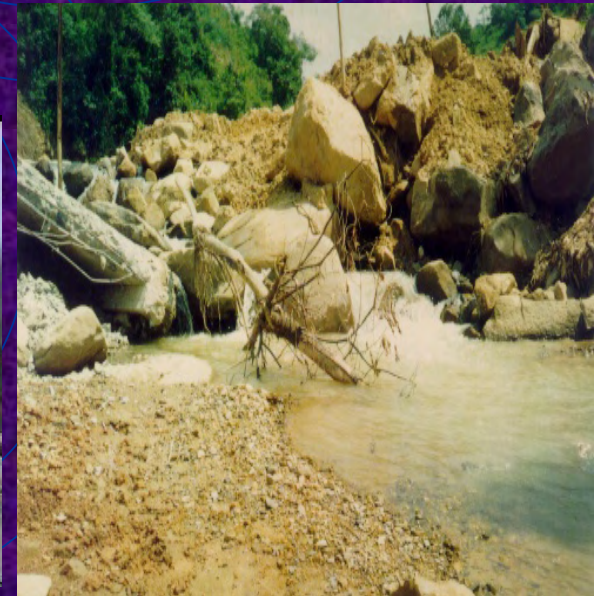
People killed/missing
1-16
17-45
46-191
192-460
461-1292

SOME SERIOUS DISASTER

Flashflood in Lai Chau Province

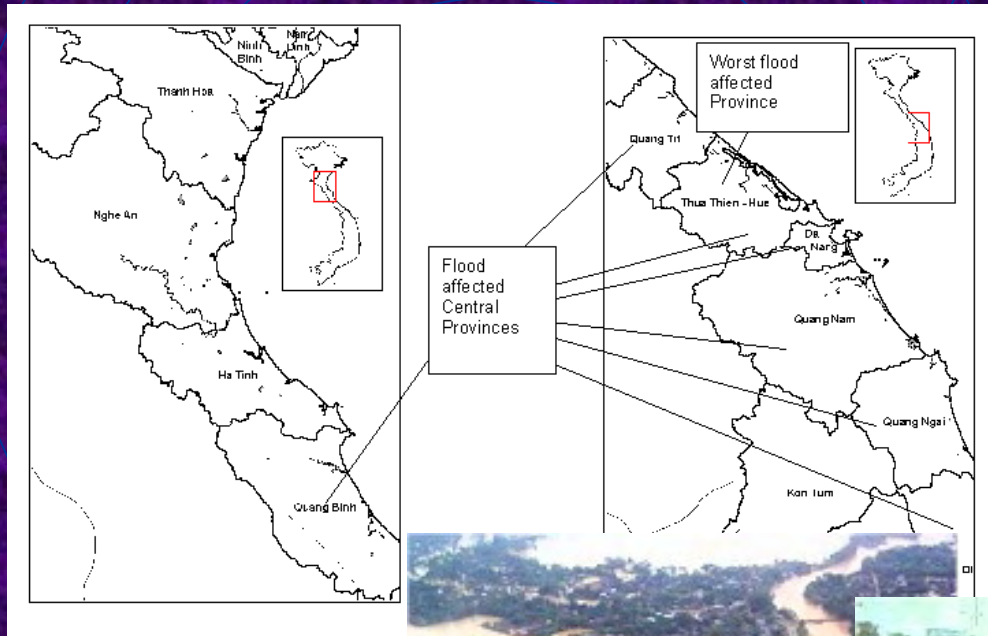


Nam Coong commune,
Sin Ho district,
Lai Chau Province
Peoples killed: 40
Peoples injured: 17
Total losses: : 140,000US\$



SOME SERIOUS DISASTER

Flooding in Central Provinces



In November 1999, the severe floods occurred in Central Provinces from Quang Binh to Binh Dinh



caused more than 600 people killed and missing and nearly 300 Million US\$ loss of property

SOME SERIOUS DISASTER

Flooding in Mekong River

In November 2000, 2001 the Mekong River Delta has suffered from the hardest flooding in the last 40 years.



The loss caused by floods in the year 2000:

People killed: 481

in which:

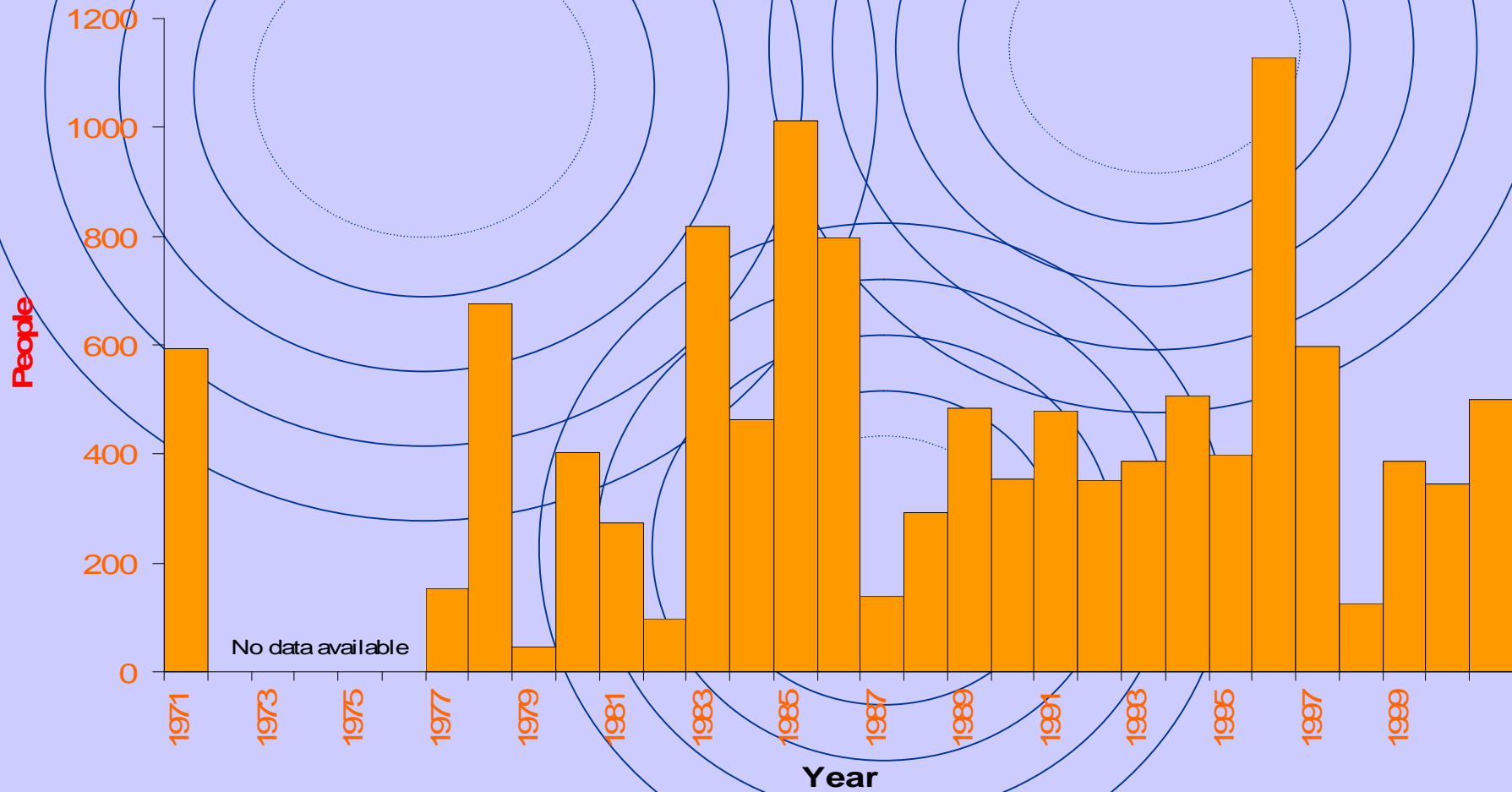
Children killed: 335

Households effected: 888,000

Total Economic Losses: 280 Mil. US\$

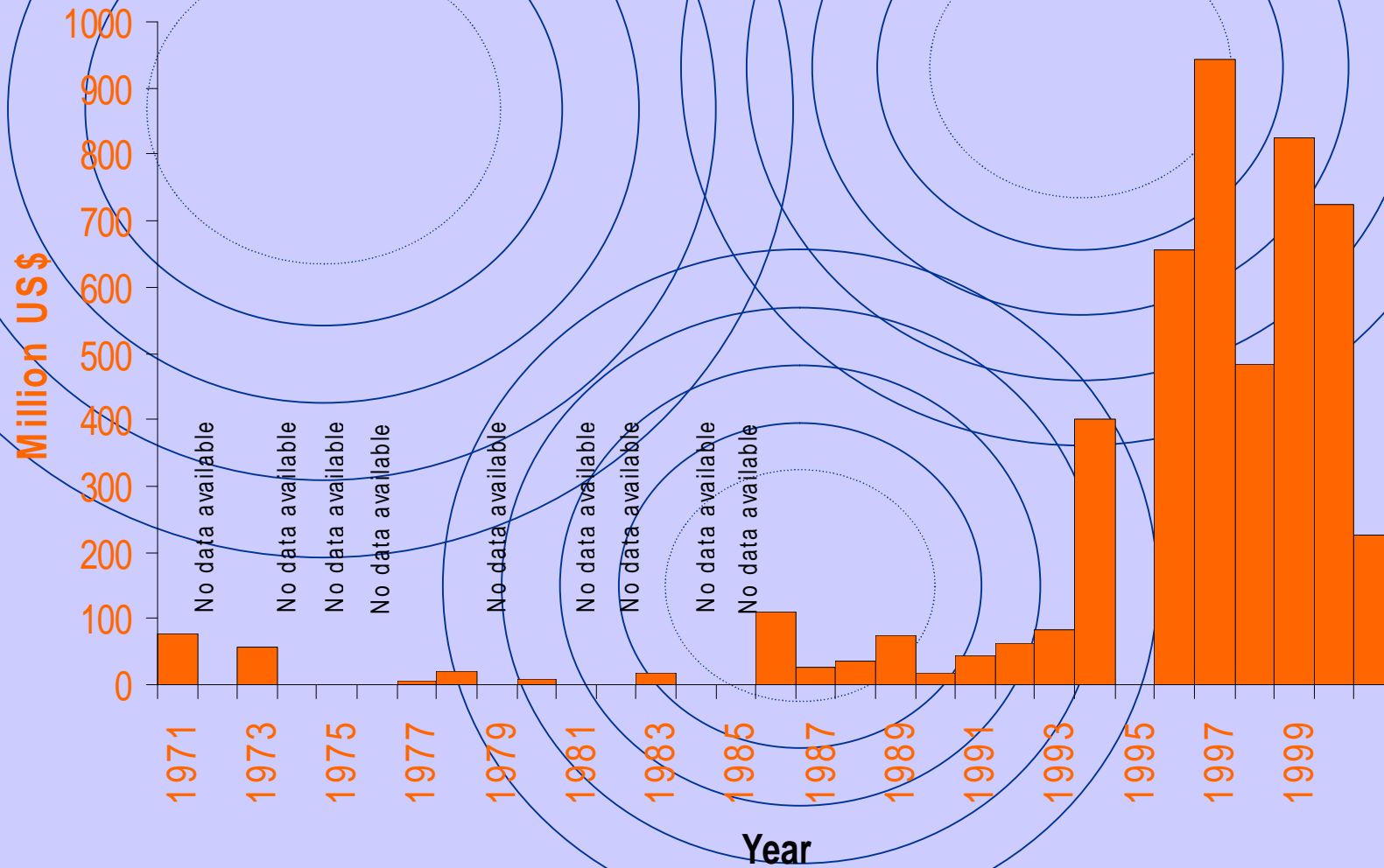
DISASTER DAMAGE

Loss of lives caused by natural disasters per year



DISASTER DAMAGE

Economic loss caused by natural disasters





**PAT III: FLOOD
CHARACTERISTICS IN
VIETNAM**

FLOOD CHARACTERISTICS IN VIETNAM

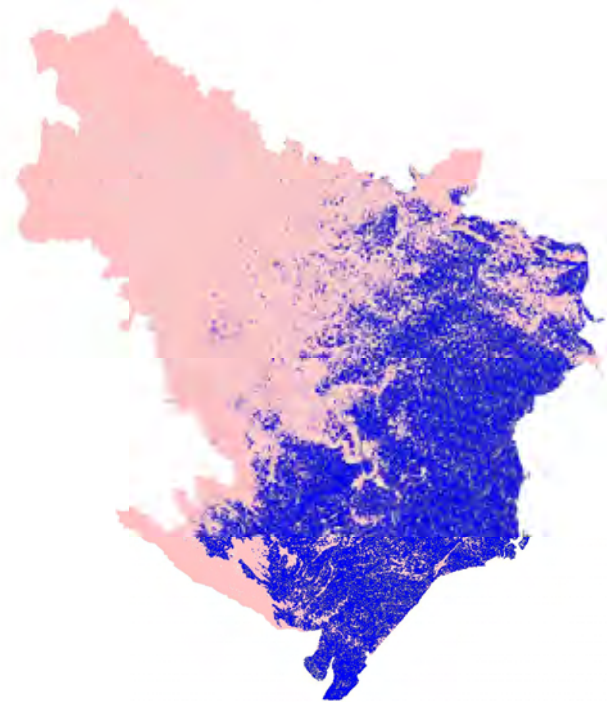
Red River Delta and Midland of the North Viet Nam

- **Red River Delta is one of biggest plains in Vietnam.**
- **This Delta affected mainly by flood, inundation and storm surges**
- **If a big flood occurs in combination with high tide or typhoon landfall the risk of dike break to cause inundation in a large area is unavoidable**

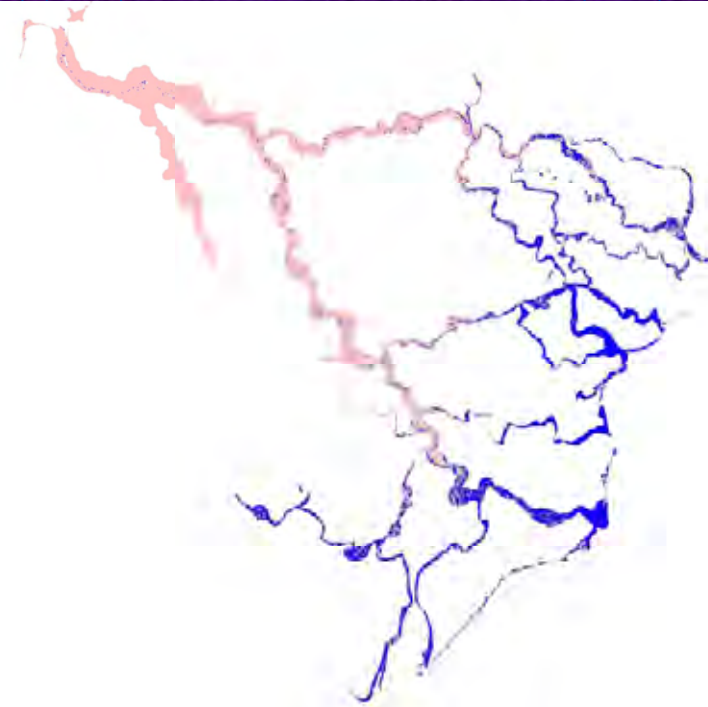
2.2. The Red River Delta:

2.2.1. Flood: If the sea level increases 1m and combined with heavy rain, there will be 650,000ha of flooded area (nearly 1/3 of the area is lower than the sea level);

The river level will increase to 0.5-1m and exceed the warning level 3, the water elevation is close to the dike peak



*Sea level elevation scenarios + 1m,
without dike*

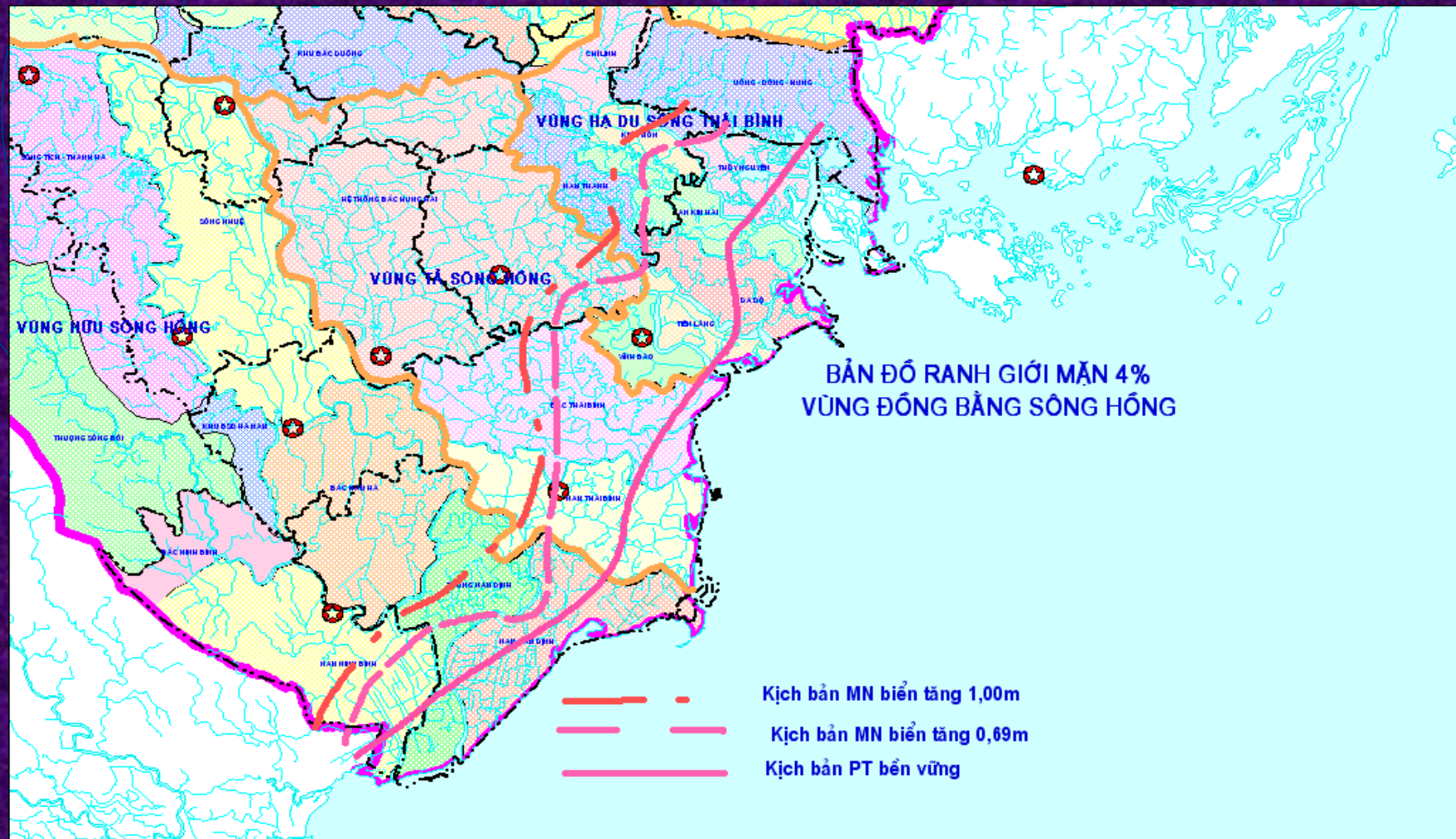


*Sea level elevation scenarios + 1m, with
dike*

2.2. The Red River Delta (continued):

2.2.2. Salt intrusion

Salt infiltration to inland (the salt boundary is 4‰ and 25-40km from the watergate).



Central Vietnam

- The Central Viet Nam is usually affected by floods and inundation, typhoon and storm surge.
- Flood and inundation often associates with heavy rains, typhoons, tropical depressions.
- Floods concentrating very quickly to down stream where lands are low, the drainage capacity is poor leads to prolonged inundation.
- Floods in rivers in the Central Viet Nam are classified as flash floods.
- Tide and storm surges play a certain role in increasing inundation situation in this region.

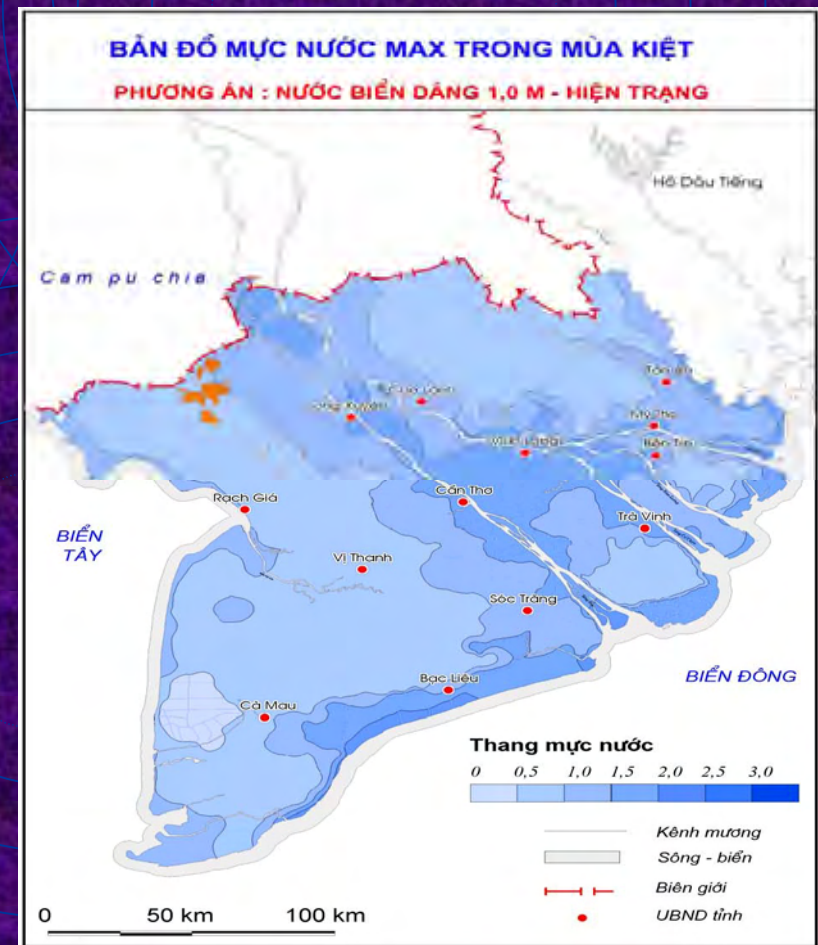
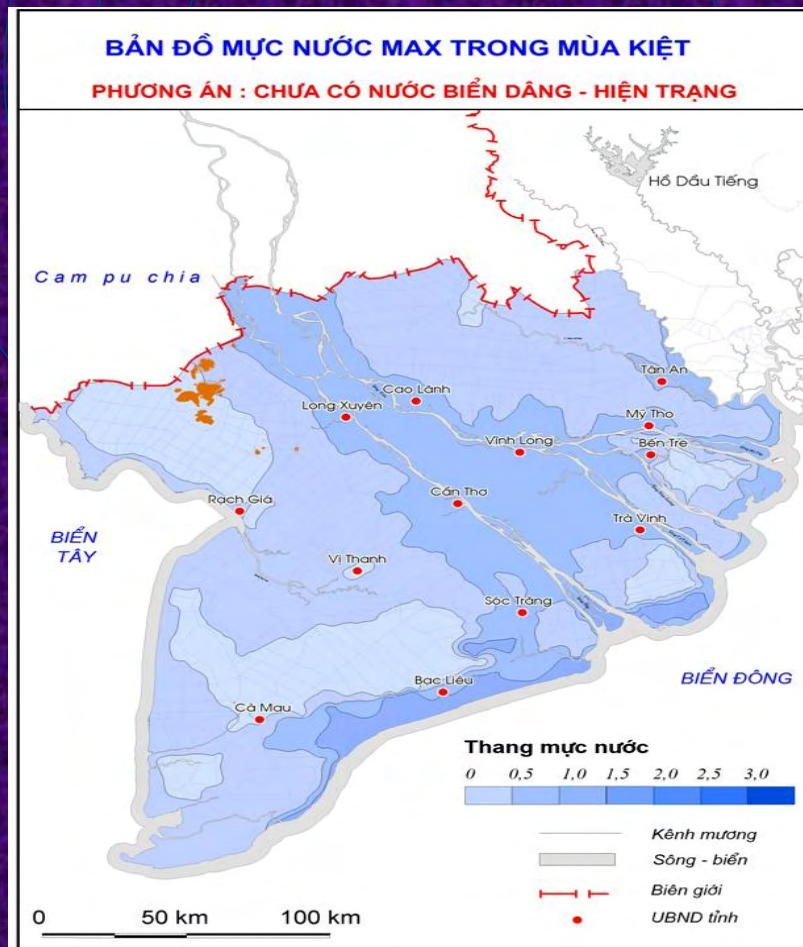
Mekong River Delta

- **Annually, flood and inundation in Mekong River Delta bring big losses in human life and property.**
- **Inundation prolongs 3 to 5 months in a large area of 2/3 delta**
- **Presently, the flood, inundation situation in combination with high tide, storm surge, etc. (unfavourable combinations in Mekong River Delta) is still a very complicated problem.**

2.1. The Mekong River Delta.

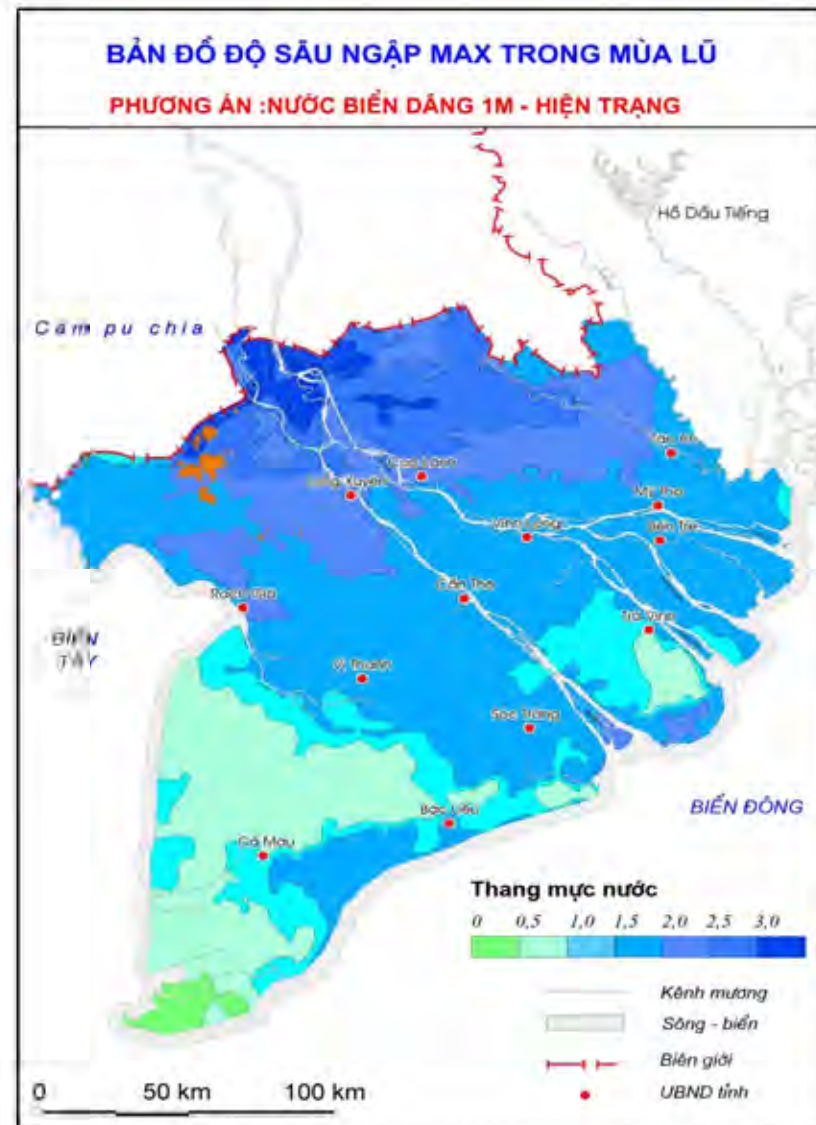
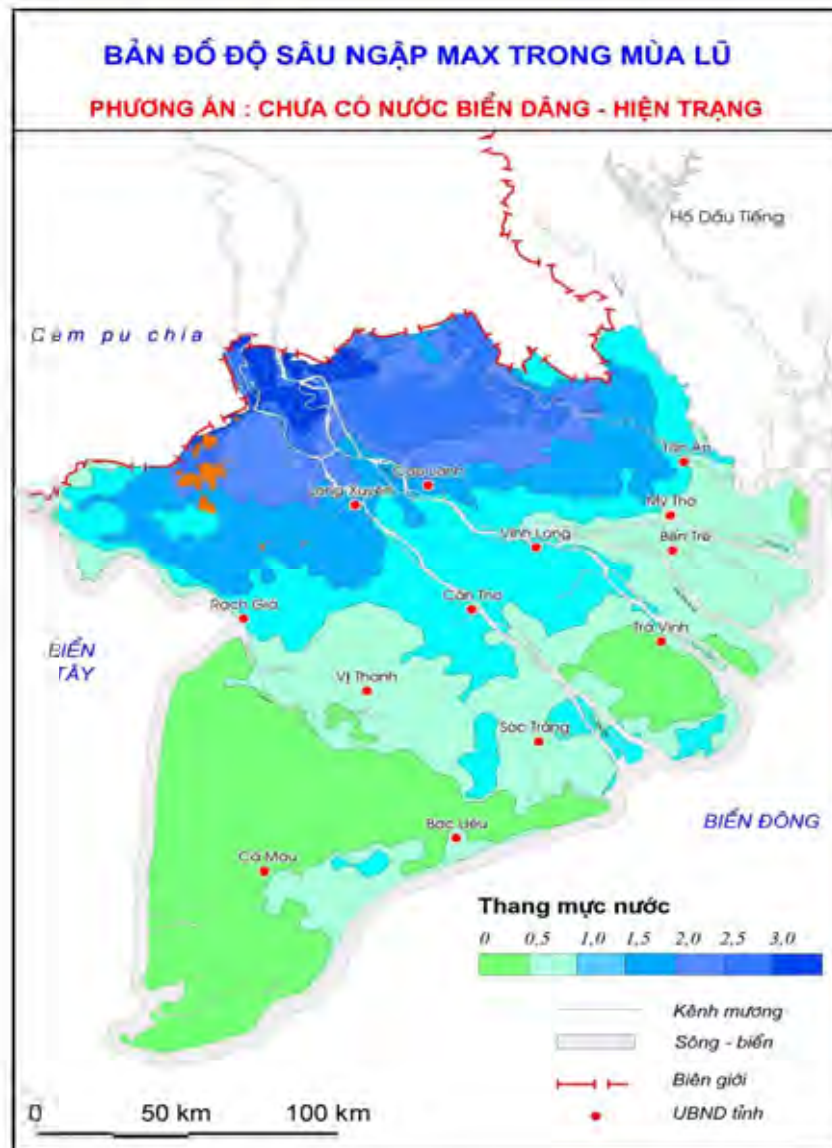
2.1.1. dry seasons

Affect the life of 17 million people in the area



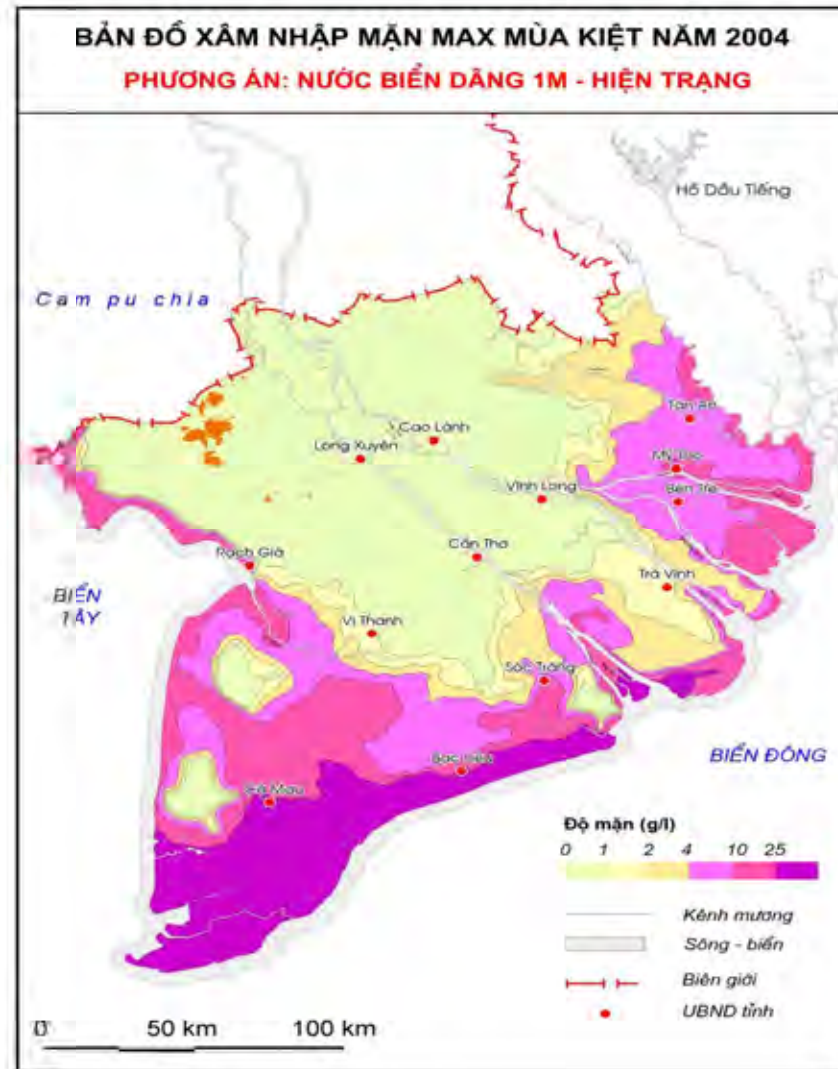
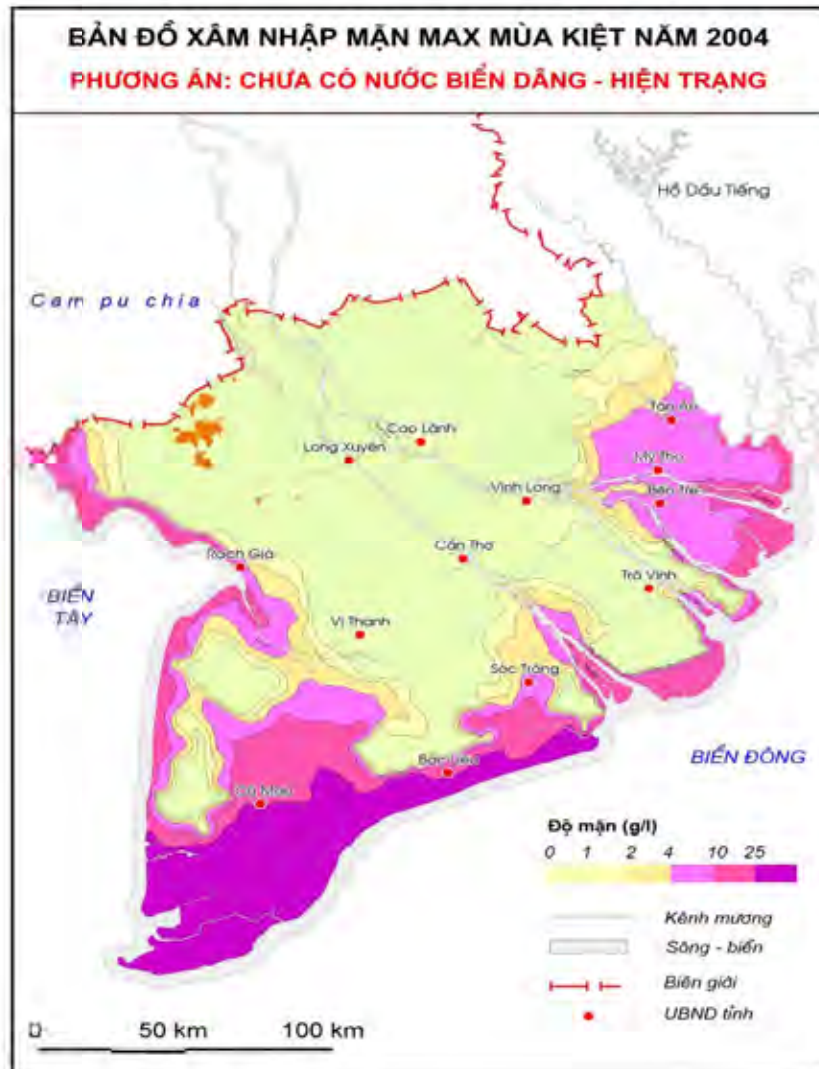
2.1. The Mekong River Delta (continued)

2.1.1. Flood season



2.1. The Mekong River Delta (continued)

2.1.2. Salt intrusion



FLOOD CHARACTERISTICS IN VIETNAM

The Mountainous Area

- **Often suffer from impacts of flash flood and big flood in main rivers.**
- **Flash flood occurs more frequently and popularly causing great damages and losses.**
- **In the same time, while big flood occurs in main rivers, the flood may overflow riverbanks and enter riverside, low lying areas, towns causing inundation in some days, even in many days,**

FLOOD CHARACTERISTICS IN VIETNAM

The Central Coastal Viet Nam

- **Storm surges**
- **Erosion.**
- **Inundation**
- **Drought**

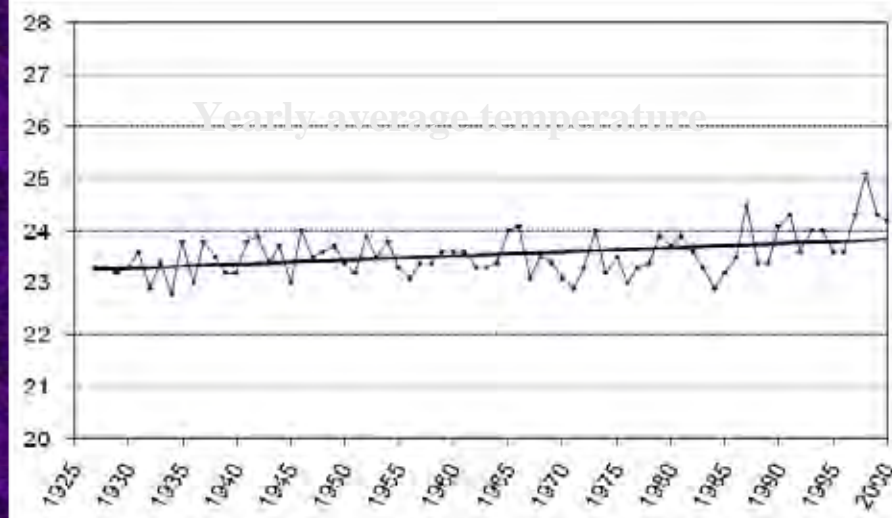
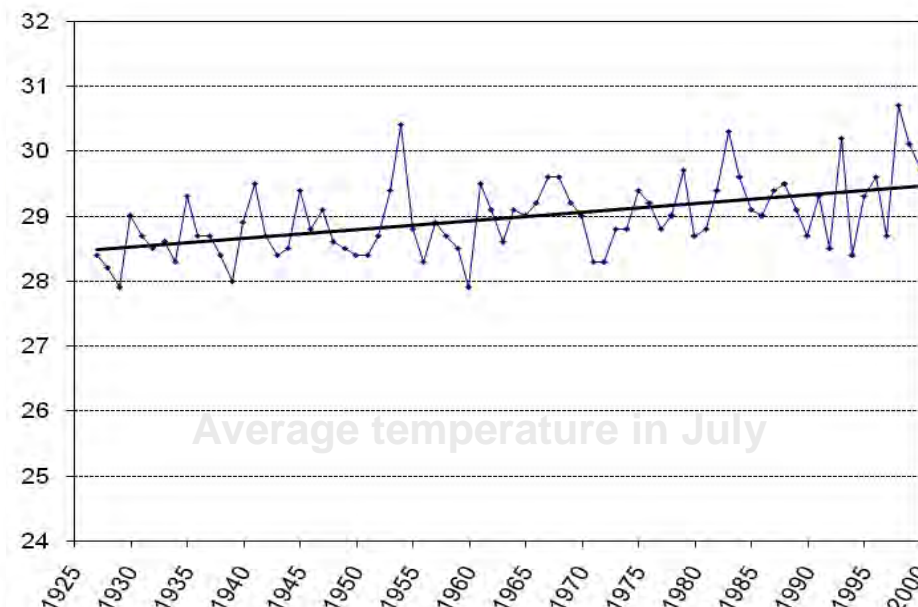
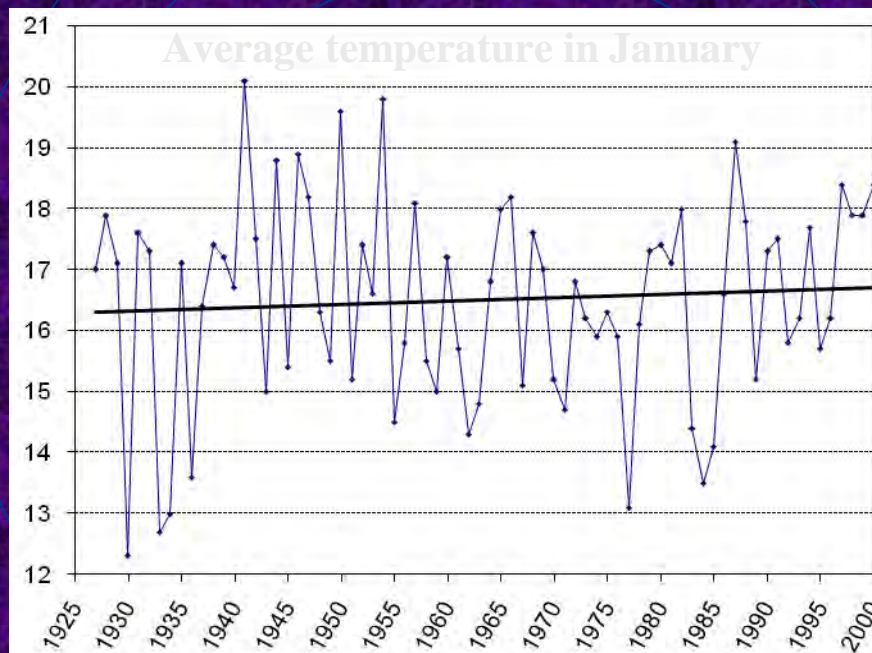
PART IV: CLIMATE CHANGE IMPACTS ON AGRICULTURE AND RURAL AREA

- **1. Introduction of Climate change**



CLIMATE CHANGE IMPACTS ON AGRICULTURE AND RURAL AREA

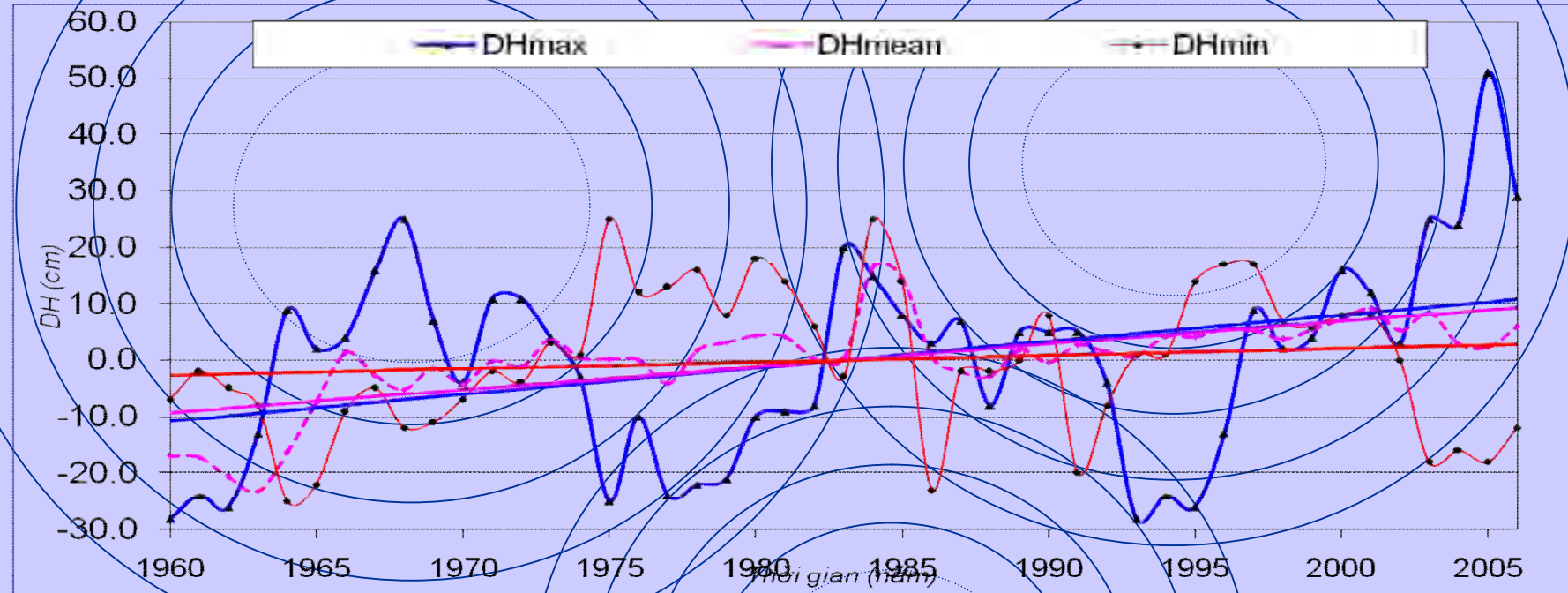
1.1. Climate change effect on Vietnam



CLIMATE CHANGE IMPACTS ON AGRICULTURE AND RURAL AREA

1.2. Sea level:

(Sea level happenings in Hon Dau station in recent years)



CLIMATE CHANGE IMPACTS ON AGRICULTURE AND RURAL AREA

1.3. Background

- Agricultural and forest lands account for 74% of national natural area.
- Rural population accounts for 73% of total national population.
- Total sector's production accounts for 20% of national GDP.
- Water resources systems, beside for irrigation, are responsible for drainage of the whole land area, and water supply for other sectors.
- Agriculture, forestry, water resources and aquaculture are much dependent on natural conditions, and significantly affected by any changes of those conditions.
- MARD duties on national food security, dyke management, flood and storm control are very important to social stability and sustainable development.
- ***Agriculture and rural development is the sector most impacted by climate change.***

CLIMATE CHANGE IMPACTS ON AGRICULTURE AND RURAL AREA

2. Impacts on Agriculture and Rural Development - Irrigation, Water Supply, Drainage and Flood Control

- Impacts of Sea Level Rise:
- Coastal eroded by change in wave and shore flows dynamic.
- Flood peaks in rivers increased
- Salt water intrusion into rivers and aquifers increased
- River and coastal dyke systems safety threaten
- Inundation increased by limited gravity drainage during high tides
- Irrigation and water supply capacity in coastal areas decreased by saltwater intrusion.



CLIMATE CHANGE IMPACTS ON AGRICULTURE AND RURAL AREA

2. Impacts on Agriculture and Rural Development - Irrigation, Water Supply, Drainage and Flood Control

- Impacts of change in hydrometeorology conditions:
- River flow change negatively, i.e. increase in rainy season and decrease in dry season, resulting more severe floods and droughts, and difficulty in system's O&M.
- Temperature increase causing more evaporation and crop water demand (according to IPCC, an increase of 1°C will cause increase of 10% in crop water demand) => increase in agriculture and other water demands exceeds current capacity of water resources systems.
- More landslide and erosion causing reservoir sedimentation and reducing effective storage.
- More severe flash floods will damage water resources facilities in mountainous areas.

CLIMATE CHANGE IMPACTS ON AGRICULTURE AND RURAL AREA

4. Impacts on Livestock farming

- Production may be reduced by more fluctuation of temperature, humidity and other factors. Livestock farming will be affected due to lack of foodstuff.
- Epidemic diseases: change in ambient environment factors may reduce livestock's resistance to diseases, and enable diseases outbreak.

5. Impacts on Forestry

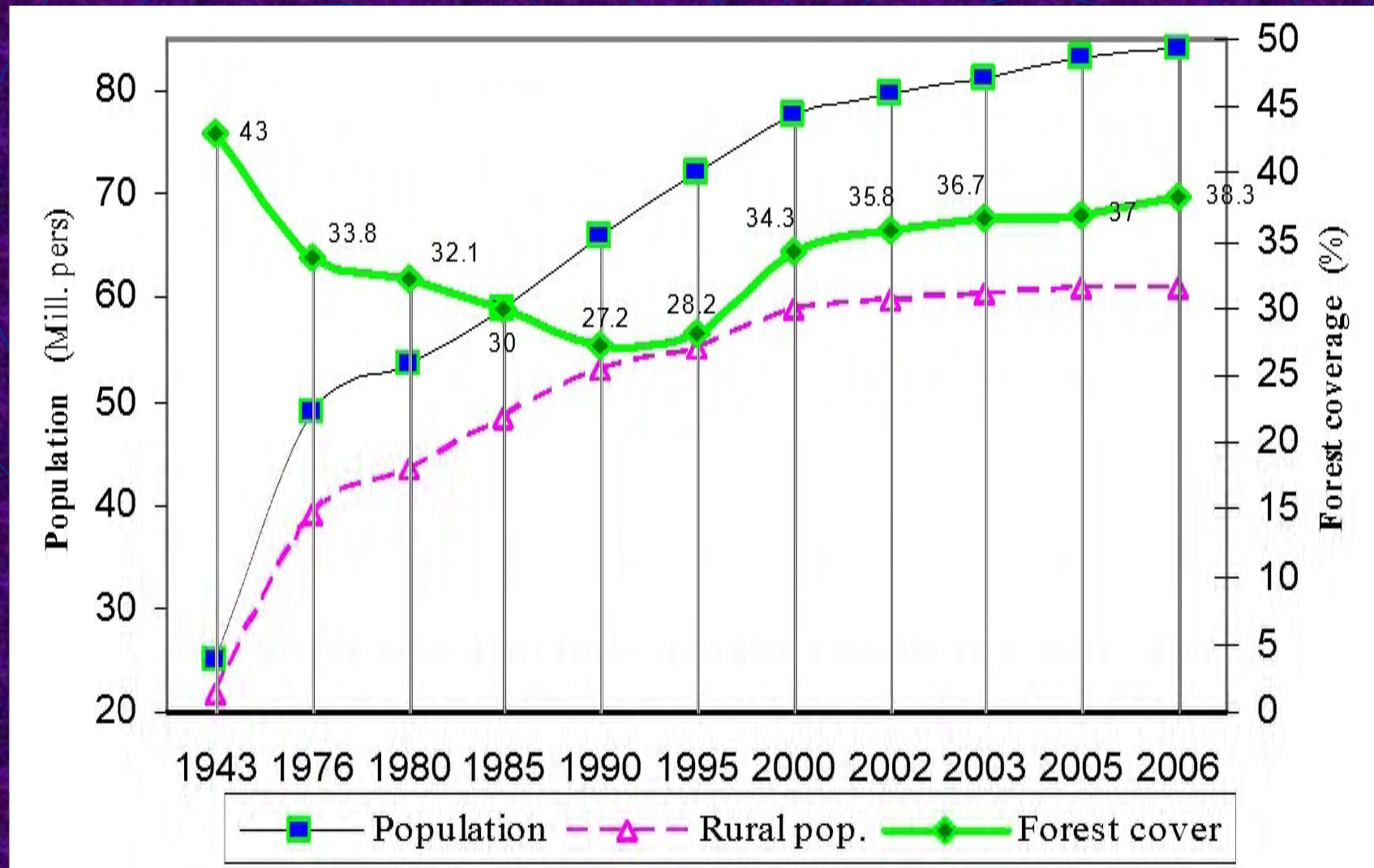
- Climate change has big impacts on biodiversity, and ecosystems components and geographical distributions.
- Most of the coastal sand dunes in Central Region will be hotter and dryer causing more severe desertification
- Change in rainfall and evaporation affects plant biomass productivity
- Value ecosystems in coastal areas (lagoons, coral reefs, sea-grass...) are vulnerable to sea level and temperature rise.
- Increase in forest fires risk because of increase in temperature and more prolong dry period.

5. Impacts on Forestry (continued)

- Forest cover has changed dramatically and dynamically over the time and space; PATTERN and TREND of forest cover changes were not always in the all regions;
- Forest quality is continuously degraded: timber volume, forest canopy structure, composition and fragmentation;
- Forest expansion: afforestation with fast growing species, short rotation, and newly natural regenerated forests with few canopy stories, low timber volume;

CLIMATE CHANGE IMPACTS ON AGRICULTURE AND RURAL AREA

5. Impacts on Forestry (continued)

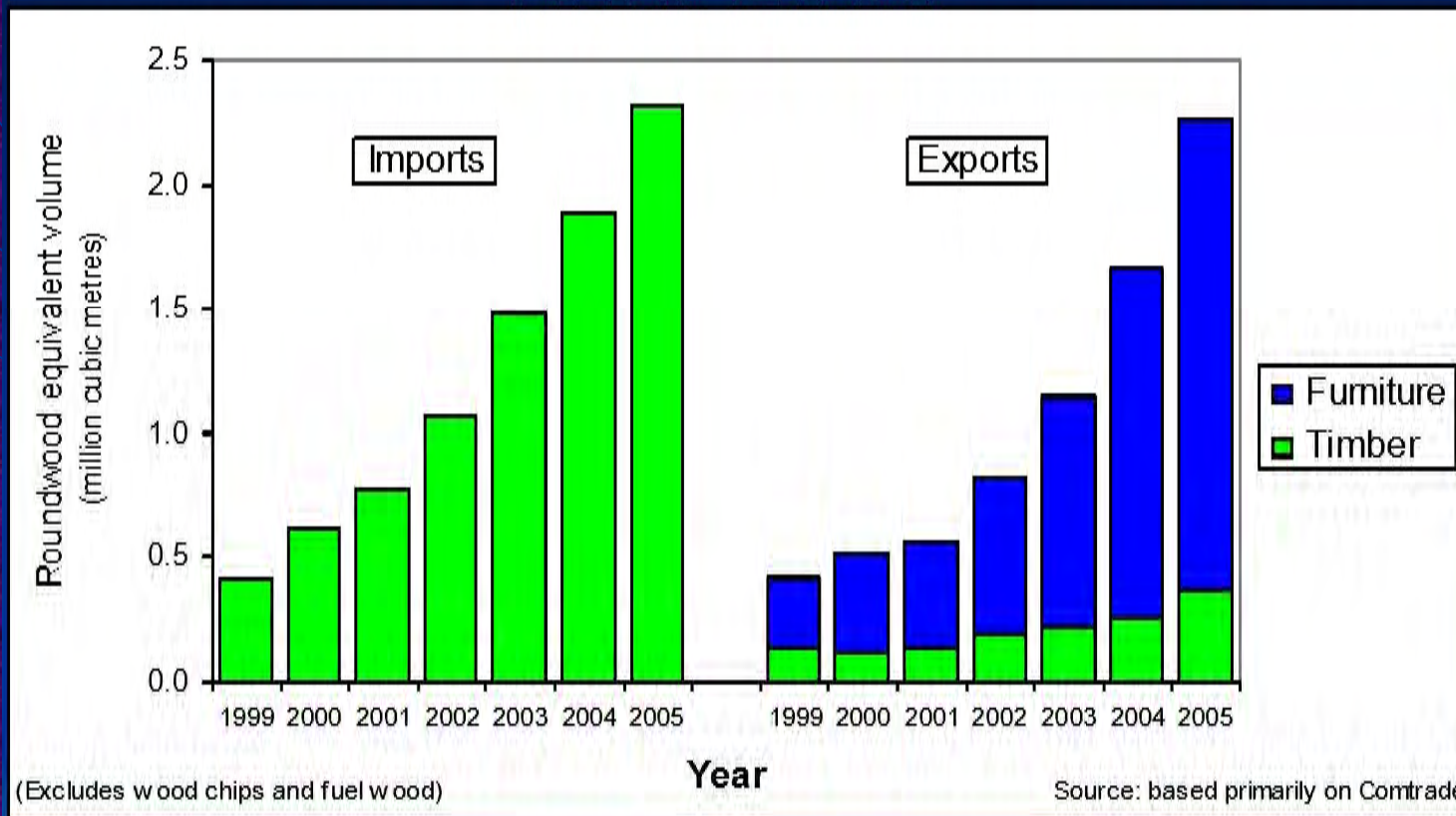


CLIMATE CHANGE IMPACTS ON AGRICULTURE AND RURAL AREA

5. Impacts on Forestry (continued)

- It is estimated that VN wood processing industry needs from 10-12 million m³ of round-wood by 2010

Timber import and export trends 1999-2005



6. Impacts on Agriculture and Rural Development - Aquaculture

- Climate change has impacts on sea ecosystems, especially marine resources
- Temperature increase affecting productivity of fish and shrimp aquaculture.
- Heavy rains, storms, floods, and droughts all adversely affect the water environment, threaten marine aquaculture species, enable diseases infection resulted in rapid and massive die-off.

7. Impacts on Rural development

- Poverty reduction: most of the poor live in rural area. The poor are most affected by climate change (UNDP) => climate change may reverse the achievement of poverty reduction.
- National targets on rural clean water supply and sanitation will be negatively affected by storms, floods and droughts.
- More cost for O&M of rural infrastructure due to floods, landslides, etc.

8. CC adaptation in Water resources

- Key policy to response to CC is utilizing water resource scientifically, properly and cost- effectively,
- Develop and improve a legal frame work including laws and regulation, circulars and amended policies,
- Strengthened management mechanism for water resources at different level,
- Develop and implement policies, plans, programs to respond to CC at all level,
- Identify suitable scientific and technical solution (overall plan for river basins, change specification for water use and exploitation project, methods for cost effective use of water resources, protection and preservation of water resources, water pollution control,
- Raise community awareness.

CLIMATE CHANGE IMPACTS ON AGRICULTURE AND RURAL AREA

9. Climate Change related activities carried out by MARD

- ADB-funded Project “Climate change impacts in Asia: Vietnam” carried out by Institute of Water Resources Planning and other organizations in 1992-1994.
- Research on water management in rice field to reduce methane emission carried out by Vietnam Institute for Water Resources Research in 2004-2007.
- Reforestation and forest conservation programs (327, 5 million ha programs) are significant contribution of MARD to climate change mitigation efforts in Vietnam.

10. Climate Change related activities carried out by MARD (continued)

During 2007, recognizing the importance of climate change issues, MARD has promoted more activities on climate change:

- In April 2007, MARD Minister Cao Duc Phat directed Vietnam Institute for Water Resources Research and Institute of Water Resources Planning to conduct evaluation of climate change impacts on agriculture and rural development. In July 2007, a Report entitled “Global climate change – issues facing agriculture and rural development sector” was completed.
- On 17/9/2007, MARD Minister issued the Decision No. 2708/QĐ-BNN-KHCN, establishing a Task Force for Climate Change Mitigation and Adaptation in Agriculture and Rural Development Sector.
- On 21/11/2007, MARD Minister issued the Decision No. 3665/QĐ-BNN-KHCN, establishing the Steering Board for Climate Change Mitigation and Adaptation Action Plan and assign a Vice Minister – Prof. Dr. Dao Xuan Hoc as the Chairman.
- On 22/11/2007, MARD organized a workshop on climate change and natural disasters management.

11. Climate Change related activities carried out by MARD (continued)

11.1 . Research program

- Research program and solution plan to ensure safe and stable life for the inhabitant in The Mekong River Delta, Middle Region, Red River delta, Northern mountainous area in the increasing temperature and sea level elevation.
- Research program and solution plan to ensure the two-time crop area of 3.8 million ha and ensure the national food security.
- Research program and solution plan to prevent and anti-flood for the Red river, Thai Binh river system and Mekong River Delta, the rivers in the Middle areas, from Thanh Hoa province to Khanh Hoa province, Southern Central Part and Southeast Part to climate change adaptation.

CLIMATE CHANGE IMPACTS ON AGRICULTURE AND RURAL AREA

11. Climate Change related activities carried out by MARD

11.1 . Research program (continued)

- Research program and master plan for the irrigation system in The Mekong River Delta in the Climate change and sea level elevation condition.
- Research program and plan to protect and develop the protective forest for sea dike and coastal areas.
- Research program and plan the infrastructure system, salt field, disaster prevention and mitigation...in the direction of adapt to climate change, especially the increasing temperature and sea level elevation.
- Research program and plan of the areas producing food crops, industrial crops adapting to climate change.

12. MARD'S direction for climate change mitigation and adaptation activities

Priority areas:

- Irrigation, Water Supply, Drainage and Flood Control: dyke systems, saltwater intrusion control, dam safety
- Agriculture: crop & livestock varieties, yield and production, new farming practices, cropping pattern
- Forestry: impacts on forestry, reforestation
- Aquaculture: impacts on aqua resources, yield, sustainable aquaculture

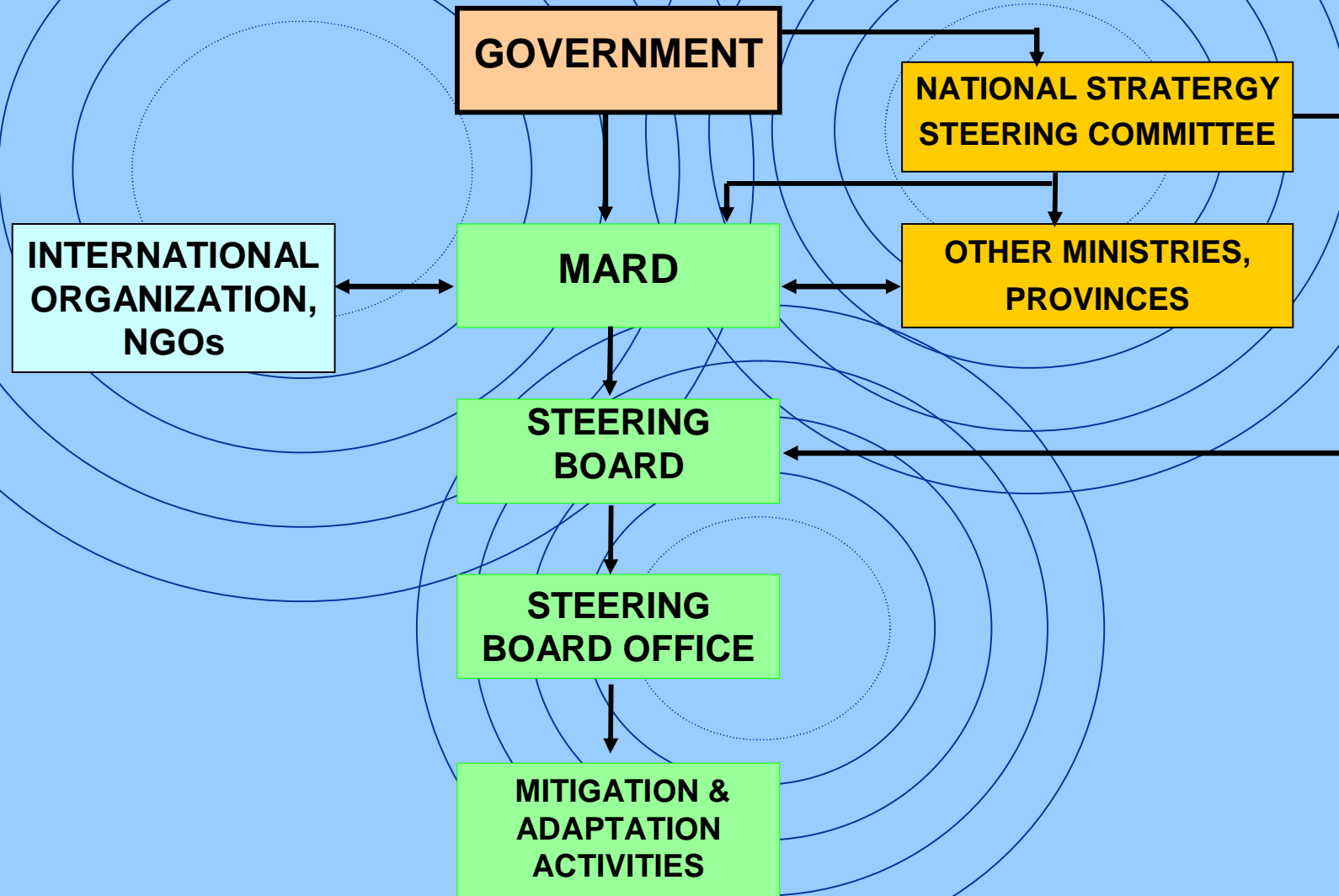
12. MARD'S direction for climate change mitigation and adaptation activities

Direction for future activities:

- Consider both mitigation and adaptation measures.
- Develop and implement the Action Plan on Climate Change Mitigation and Adaptation of Agriculture and Rural Development Sector; establish the Steering Board Secretariat
- Closely work with other Ministries and provincial organizations in program development and implementation.
- Cooperate with international organizations, NGOs and scientists in climate change related activities.

CLIMATE CHANGE IMPACTS ON AGRICULTURE AND RURAL AREA

Organization and implementation structure - Action Plan for Climate Change Mitigation and Adaptation in Agriculture and Rural Development Sector



PART v: Basic Legal for Disaster prevention and Mitigation.

1 - The Water Law.

2 - The Ordinances and its Regulation

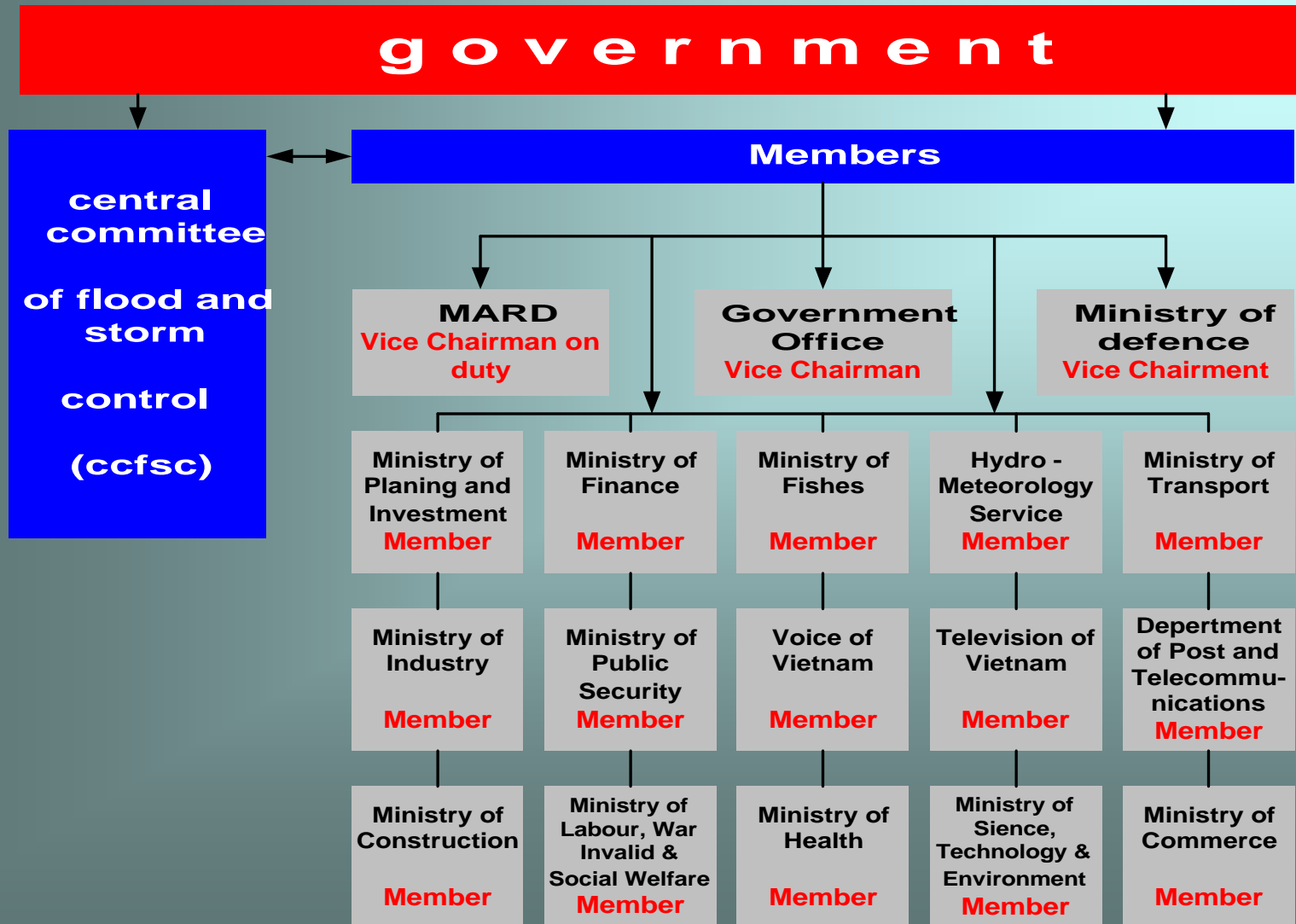
- The Ordinance for Dyke Protection
- The Ordinance for Flood and Storm Control
- The Regulation for Floods Divertions and Retention for Red River Delta

PART V: STRATEGIES AND MEASURES FOR NATURAL DISASTER MITIGATION IN VIETNAM

- Organizations Chats for Disaster Prevention and Mitigation
- Strategies and measures for: Northern, Central, and Southern Part

STRATEGIES AND MEASURES FOR NATURAL DISASTER MITIGATION IN VIETNAM

ADMINISTRATION Chats for Disaster Prevention and Mitigation

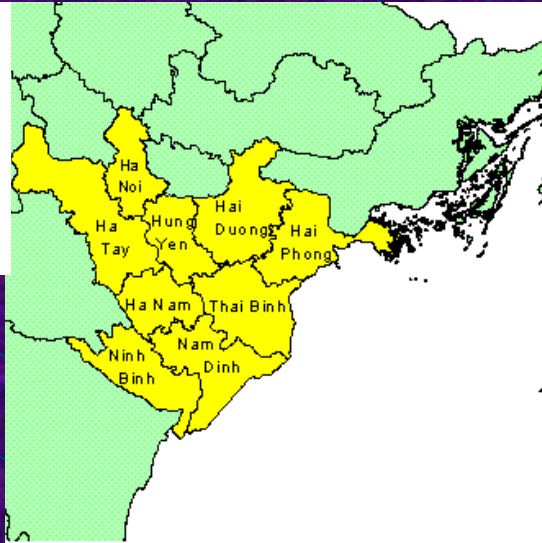
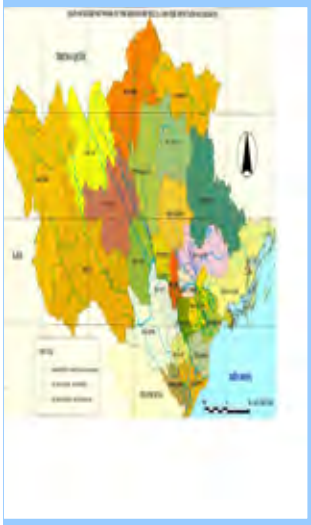


STRATEGIES AND MEASURES FOR NATURAL DISASTER MITIGATION IN VIETNAM

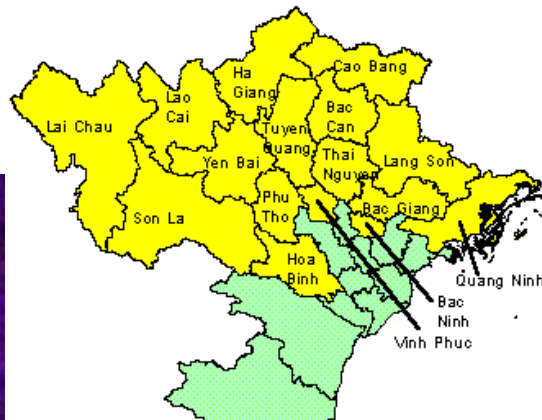
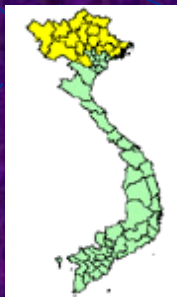
RED RIVER DELTA

main point: Dike Protection

1. Watershed forest.
2. Reservoirs in upstream.
3. Flood Diversion and Retarding area.
4. Dike system.
5. Cleaning the Riverbed.
6. Dike Support.
7. Emergency Spillway and Hardening the top surface of Dike



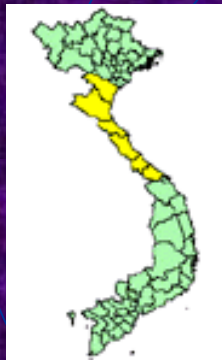
Midland of
the North Vietnam



STRATEGIES AND MEASURES FOR NATURAL DISASTER MITIGATION IN VIETNAM

THE CENTRAL PART OF VIETNAM

active preparedness, mitigation, and adaptation



1. Harden the irrigation/drainage channel system by concrete.
2. Changing the crop pattern
3. Cleaning riverbed
4. Warning System
5. Local Preparedness



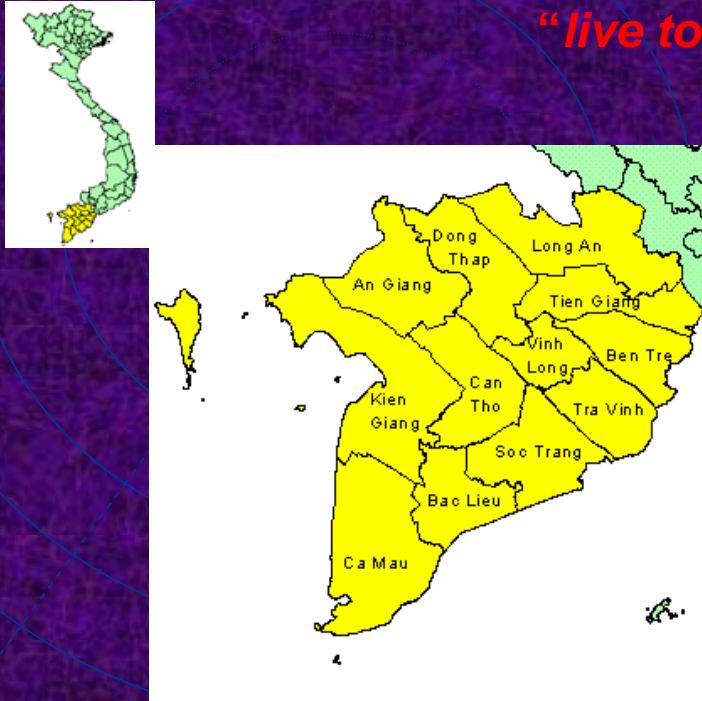
For coastal area:

1. Replanting fish village
2. Sea dike
3. Evacuation
4. Planting the mangrove
5. Building the shelter for fishing boat

STRATEGIES AND MEASURES FOR NATURAL DISASTER MITIGATION IN VIETNAM

MEKONG RIVER DELTA

“live together with floods, aiming to managing floods



1. Embankment
2. Change the crop pattern
3. Evaluation
4. High building
5. Housing program.
6. Resettlement

MOUNTAINOUS AREA

1. Resettlement
2. Reforestation

3- Other related-Regulations issued by the Viet nam Government

3.1 Decree No.168-H § BT.

3.2 Decree No. 429-H § BT.

3.3 Decree No. 73-CP

3.4 Decree No. 50-CP

3.6 Decision No. 398-H § BT

3.7 Decision No. 355-TTg

3.8 Decision No. 581-TTg

PART VI: THE DISASTER PREVENTION PROJECTS

- **Project/88/0031: Strengthen Of Dike System**
- **Project VIE/92/023 (Strengthen Of Dike System**
- **Project/93/03: Disaster mitigation**
- **Project VIE/97/002 :disaster management,
period1: done; period 2: ongoing**
- **Project NDM-Partnership**
- **Project VIE/01/014: Building the nation capacity
for disaster mitigation : ongoing**
- **other wb, adb and pam : disaster-related projects
(almost done).**

Part VII: lessons learned from major disasters

- Types of disasters increase:
 - + Global climatic changes
 - + Increase of population resulting in environmental deterioration
- Amount of damage caused by disasters increases
 - + Because of social development, disaster occurs will cause higher damage
 - + High population density in favorable living conditions are vulnerable to disasters

lessons learned from major disasters

- It is very essential to cooperate in disaster preparedness and mitigation at all levels, to mobilize the community to participate in disaster preparedness and mitigation in a well-organized manner under the direction of the government. therefore, disaster preparedness and mitigation will be very effective.
- Structural measures and non-structural measures are applied synchronically; these measures should be suitable to specific features of each region to reduce losses caused by disasters.
- Floods and storm are main disasters and can cause severe damages in large areas in viet nam

lessons learned from major disasters

+ rescue :

- mobilization of resources person at place for emergency rescue activities
- mobilization of supplementary forces from central level to help the crucial points
- priority for disaster mitigation structures, rescue activities and property
- inventory of damage data and rescue needs for aid resources appea

+ recovery :

- quick first - aid for victims
- quick recovery and rehabilitation of disaster mitigation structures and infrastructures
- stabilization of the life of the people
- production recovery

lessons learnt from response, rescue and recovery activities :

+ preparedness :

- enhancement of public awareness
- strengthening forecast and communication system
- Enhancement of disaster preparedness activities
- organization of disaster mitigation forces at all levels
- formulation of various disaster preparedness and mitigation measures

+ response :

- application of "*four at place : command at place, resources person at place, material and logistics at place* "
- mobilization of resources at place especially the army force



PART VIII
CONCLUSION AND
RECOMANDATIONS

CONCLUSION AND RECOMANDATIONS

1. Disasters is a very serious problems in Viet Nam, particular is floods and inundation. Floods, inundation in Viet Nam occurs more frequently, more seriously

2- A special attention should be paid to undertake integrated management for vital river basins, regions and areas those are under regular threat of flood/inundation; issue legal documents and regulations on disaster prevention; take rational combination of structure with non-structure measures for each certain river basin, region.

CONCLUSION AND RECOMANDATIONS

3. The main line in flood, inundation prevention and preparedness in Red River Delta “Dike Protection”

- Application of structural and non-structural measures. - The existed measures should be improved and have to put in Masters plans for Water basin development.

4. In the Central Viet Nam, the main line is ***active preparedness, mitigation, and adaptation***

CONCLUSION AND RECOMANDATIONS

5. The main line in floods prevention and preparedness in MeKong River Delta is ‘Living together with Floods’.

- Planning cropping seasons and suitable cropping patterns for a certain area;
- Planning residential area and infrastructure;
- Enclosing embankment to protect crops;
- building flooding release system to rapidly drain flood flow from the flooded areas.

6. Work out the proper and more rational approach in flood prevention and preparedness for each area, region, and river basin. Improving the selection of necessary information, monitoring, accurate and timely prediction of Floods

CONCLUSION AND RECOMANDATIONS

7. Floods, inundation disaster should be considered as the social problem. The Socialisation of all preventive operations is needed to reduce, restrict flood and inundation and minimise the loss caused by this disaster.

8. The exploitation and application of advanced techniques, technologies and experiences to bring up higher efficiency to floods, inundation prevention and preparedness activities.

CONCLUSION AND RECOMANDATIONS

7. Floods, inundation disaster should be considered as the social problem. The Socialisation of all preventive operations is needed to reduce, restrict flood and inundation and minimise the loss caused by this disaster.

8. The exploitation and application of advanced techniques, technologies and experiences to bring up higher efficiency to floods, inundation prevention and preparedness activities and minimise losses.

CONCLUSION AND RECOMANDATIONS

9. Setting up a complete and issues the strategy to avoid and prevent flood and inundation in particular and natural disaster, in general, in our country.

10. The finally, the setting up and strengthening an effectively corporation between Countries in the regional, to help each other in coping with disasters.

**Thank you for your
attention**

