



Scientific Capacity Building for Climate Change Adaptation in Rural Coastal Zones of Vietnam

Assoc. Prof. Dr. Do Minh Duc

Hanoi University of Science

E-mail: ducdm@vnu.edu.vn

We start with...a concluding remark

Climate change are normally considered as a long-term problem, and it is. We have seen that local people and decision makers would like to care about “in sight” or short-term problems rather than something last for decade or century.

Project (CIA2009-06-Duc): Capacity Building for Adaptation to Climate Change in the Rural Coastal Zone of Vietnam

CONTENT

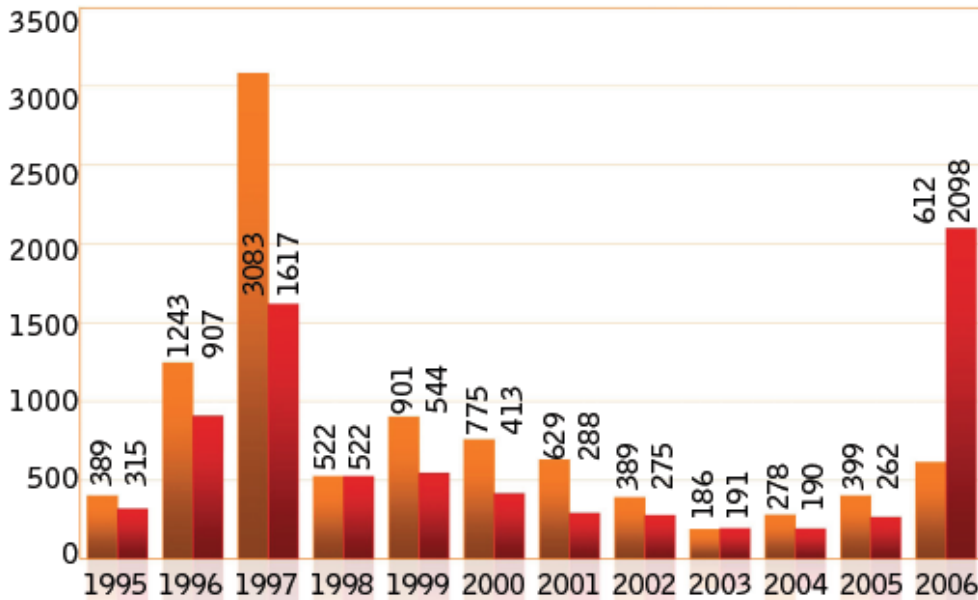
- Brief introduction about natural disasters in Vietnam
- Lessons learned from an actual disaster: indigenous knowledge can be effective for CC adaptation at a local scale
- Introduction of activities for capacity building
- Conclusions

1. Natural Disasters in Vietnam

Natural Disasters in Vietnam & Southeast Asia: Material & Human Costs

No	Country	Material Cost (in US\$ thousands)		Human Cost (In Fatalities)	
		1985-1994	1995-2004	1985-1994	1995-2004
1	Philippine	3,642,287	1,715,180	15,608	6,549
2	Indonesia	454,063	22,760,547	5,608	171,503
3	Vietnam	411,100	2,291,645	4,528	7,863
4	Thailand	3,076,667	1,447,344	1,459	9,649
5	Malaysia	11,500	18,025	406	602
6	Cambodia	0	156,542	656	613
7	Singapore	0	0	0	36

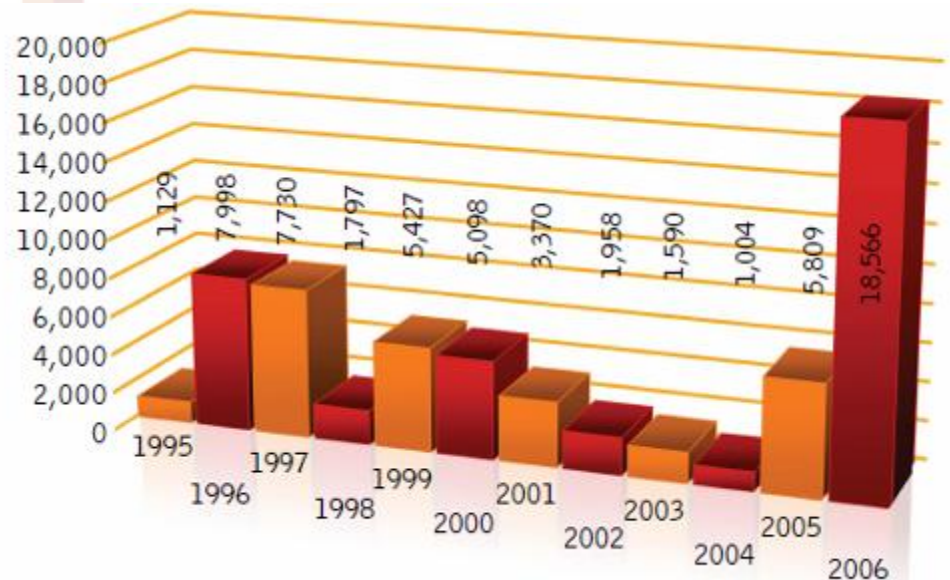
Figure 1_ Total losses in terms of people caused by disaster from 1995- 2006



Loss of lives during the period 1995-2006

Data in Figure 1 illustrate the regular recorded deaths for natural disasters, with the two highest recorded in 1997

Damage of infrastructure, especially in 2006 (18.566 bil. VND - \$01 bil.)



2. Traditional experiences in coping with natural disasters

- People believe on experiences
- Living harmony with the nature
 - Keep the forest
 - Knowing the nature: suitable land-use based on the natural evolution such as sandy bars, meandering rivers, etc
- Simple warnings on the hazards



Flying in the middle - Cool

Flying high - Sunny

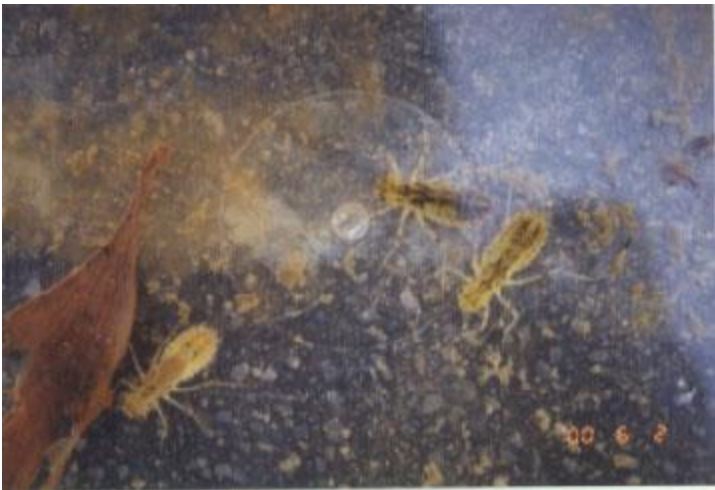


Behavior of dragonfly



Flying low - Rainy

Simple traditional experiences





Ba Be (Three Oceans) lake, Bac Kan province



Limitations of traditional experience

- People only take care of the phenomenon, they can not care of the process
- Low quality of early warnings
- No monitoring
- Poor large spatial management

EXPERIENCES FROM A DISASTROUS TYPHOON IN THE NORTH VIETNAM

+ Storm No.7 (Damrey) (26/9/2005) caused:

- 63 persons dead
- Property loss: 3,509 bill. VND (220 mill. US\$),
including:

Namdinh: 1889 bill. VND;

Ninhbinh: 203 bill.;

Thanhhoa: 747 bill.

Thaibinh: 178 bill.;

Yenbai: 162 bill.;

Phutho: 97 bill.;

Hai phong: 53 bill.;

and Hoabinh: 50 mill.



Fig1. Vietnamese coastal zone



Wind in the storm



Waves in the storm

Seawater
overflows
seadyke
causing
inundation in
Hai Hau



**What happened at
the coast**



A seadyke segment was destroyed



Temporary reinforcement of the seadyke

Lessons learned

Success

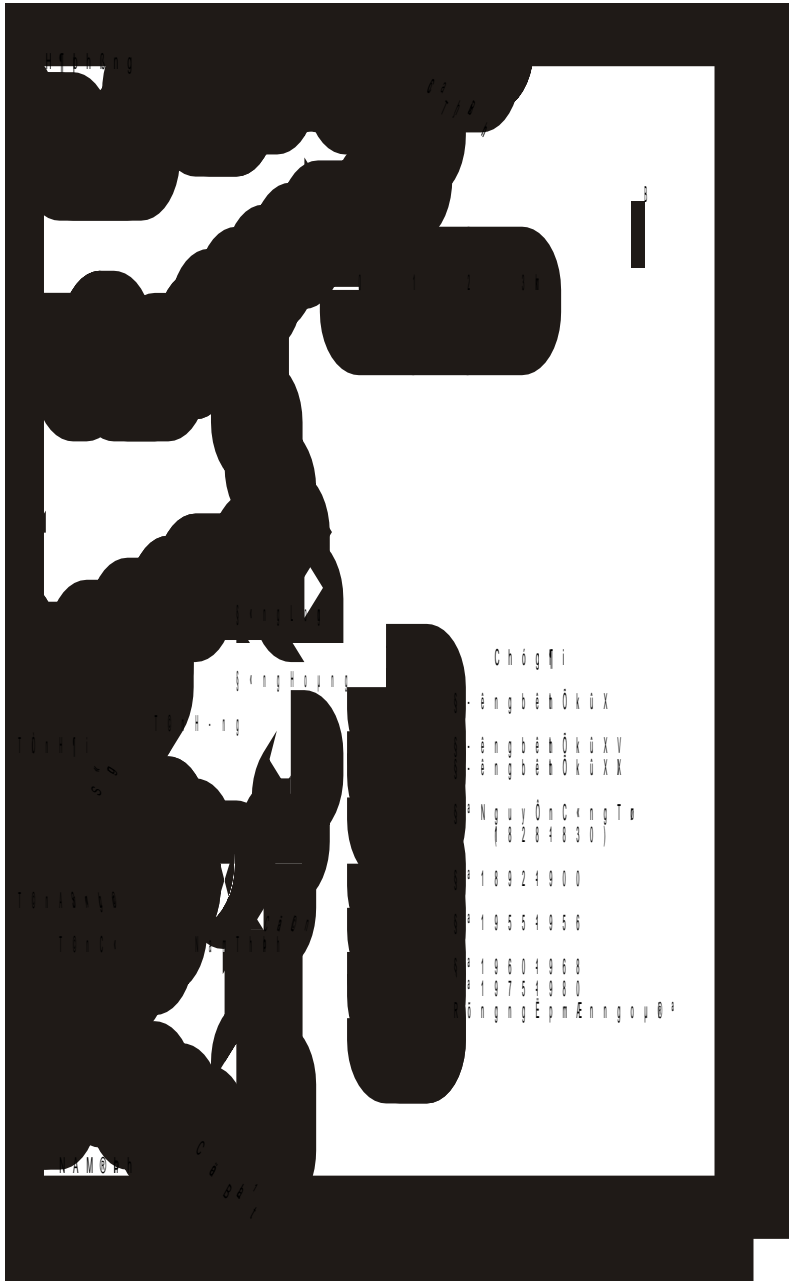
- Storm forecast plays a very important role for disaster mitigation.
- Residents had good caution on the disaster.
- People (over 100,000) were immediately evacuated, **there was no fatality**. The determination of central and local authority are highly appreciated.

Lessons learned

Un-success

- Seadyke was not well built.
- The infrastructure was not strong enough to cope with such an extreme climate event.
- Poor spatial management

SEADYKE SYSTEM IN THE COAST



Location of dykes in
the 20th century

Location of dykes in
the 19th century

Safer

Dangerous

Community-based “4 in-situ” Approach

- In-situ command;
- In-situ human forces;
- In-situ means, materials
- In-situ logistics

“Four in-situ” for each household

Commander:

- Parent
- Experienced
- Strong
(Registered in advance)

Human forces:

Strong man who can help others

Mean, materials:

- Emergency shelter
- Temporary shelter
- Evacuation means

Logistics:

- Food
- Fresh water
- Medicine

3. Activities for Capacity building for local people and scientists

**CLIMATE CHANGE - RELATED
GEOHAZARDS IN THE NORTH COAST OF VIET NAM**

Climate change and its impacts on the coastal zone of Vietnam are very serious issues. The sea level in the north coast is rising about 2 mm/y. The number and intensity of tropical cyclones have a complicated change with a tendency of such more severe in recent years (2004-2009).

Climate change-related geohazards in the coast include erosion, inundation and flooding, saline intrusion, and sandy instability. Sea level rise and tropical cyclones are strengthening the coastal erosion. Each year the exceeding rate of erosion due to sea level rise is 0.1-0.3 m/y. Inundation and coastal flooding can lead to the immigration of hundred thousand people. A typhoon landing in high spring tide can cause a disaster of inundation, flooding and saline intrusion in the coast. Sea level rise causes larger wave pressure on the sandycoast making it more unstable in typhoons and storm surges.

The issue of climate change in general and sea level rise (SLR) in particular has been a significant event in recent years. According to the estimation of the World Bank, Vietnam is one of the five most vulnerable countries to the global climate change.

The varying of maximum, moderate and minimum water level following month (at Son Dau station).

The number of tropical cyclones attacked Vietnam coast (1961-2009).

Sea level rise and the rise of seawater level during typhoons can cause severe inundation along the coast up to the elevation of 2-3m above the high tide.

Sea level rise and typhoons strongly threaten the stability of sandycoast system. The dikes can not suffer a strong typhoon landing in the sea or high tide.

Measures for sandycoast protection

- Revetment and groins
- Revetment
- Standby limestone blocks
- Mangrove plantation

Sea level rise and tropical cyclones strengthen the coastal erosion. The exceeding rate of erosion due to SLR is 0.1-0.3 m/y.

4. 16% of Vietnam's territory is inundated when sea level is 5 m above the present sea level. The main influence will concentrate in the Red River delta in the North and the Mekong River delta in the South. In a potential scenario that sea level is rising 1m in 50 years 10.8% of Vietnam population will be directly affected.

The 4 provinces in the North coast have 0.09 - 0.58% of the total province areas. The number of affected is about 5,000 in Ninh Binh province and 61,000 in Thai Binh province

**Project Leader : Dr. Do Minh Duc
Project Reference: CIA2009-06-Duc
Project Title : Capacity Development for Adaptation to Climate Change in the Rural Coastal Zone of Vietnam (CIA2009-06-Duc).**

.... By poster



Meeting, training course and working on the field





International workshops on
Climate change adaptation

Conclusions

- The rural coastal areas are the most vulnerable to CC in Vietnam because of poor infrastructure, lack of awareness/knowledge, and high density of population
- Adaptation capacity can be developed by improving awareness of the community: Communicate by “local language”, contribute to solve their own problems, and working closely with local authority
- International co-operation is a sound way for capacity development of scientists in climate change adaptation.

Thank you for your attention!