

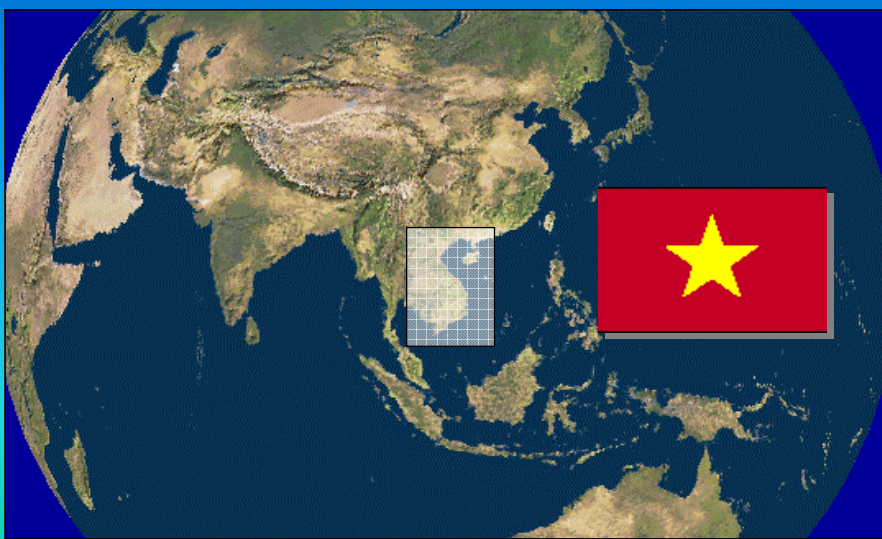
Ministry of Agriculture and Rural Development of S.R Vietnam



Department of Diike Management Flood and Storm Control

Disaster Management Center

Vietnam



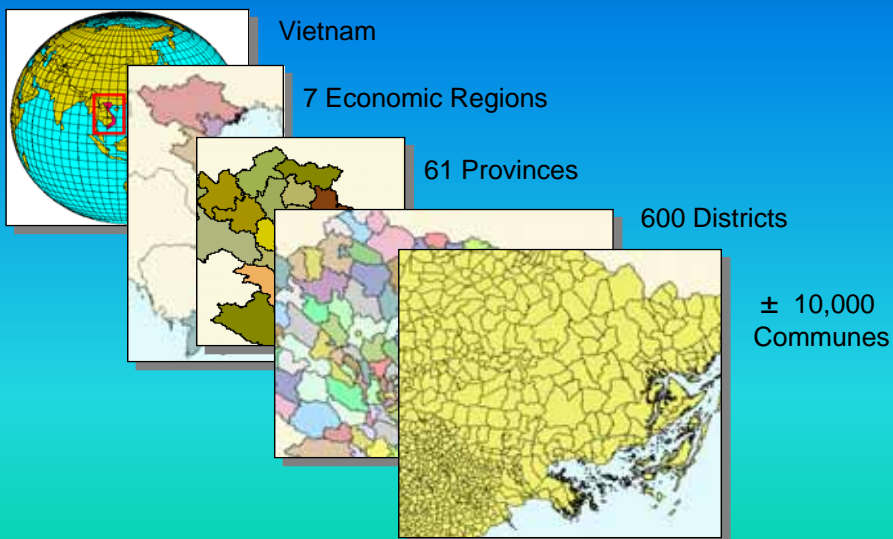


Facts and Figures

Socialist Republic of Vietnam

Area	331,690 km ²
Population	78.45 million (1999)
Population Density	226 persons/km ²
Percent Urban	20.8%
Percent Rural	79.2%
Gross Domestic Product	26,193 billion US\$ (1998)
Per Capita Income	335 US\$ (1998)

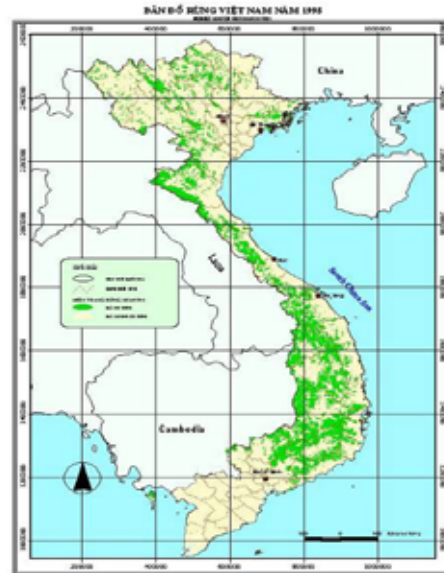
Vietnam's Economic and Administration Subdivisions



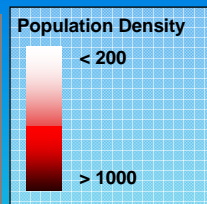
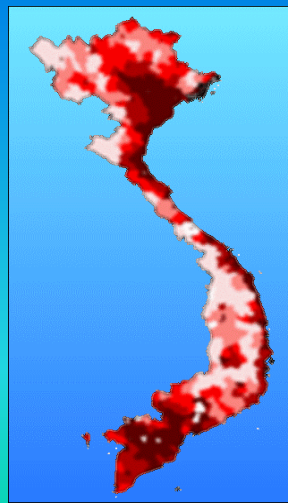
Vietnam's Forest Resources

The forest coverage

1943 44% of total land
 1995 28% of total land



Vietnam Topography and Population Distribution



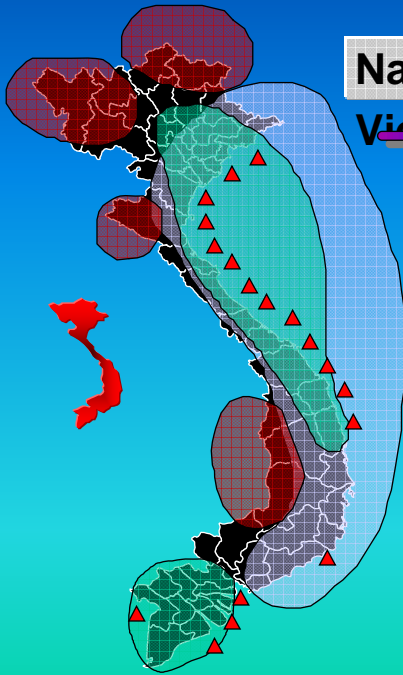
Natural Hazards in Vietnam

Relative Frequency

High	Medium	Low
Flood	Hail rain	Earthquake
Typhoon	Drought	Accident (technology)
Inundation	Landslide	Frost
Tornado	Fire	
	Forest fire	
	Deforestation	

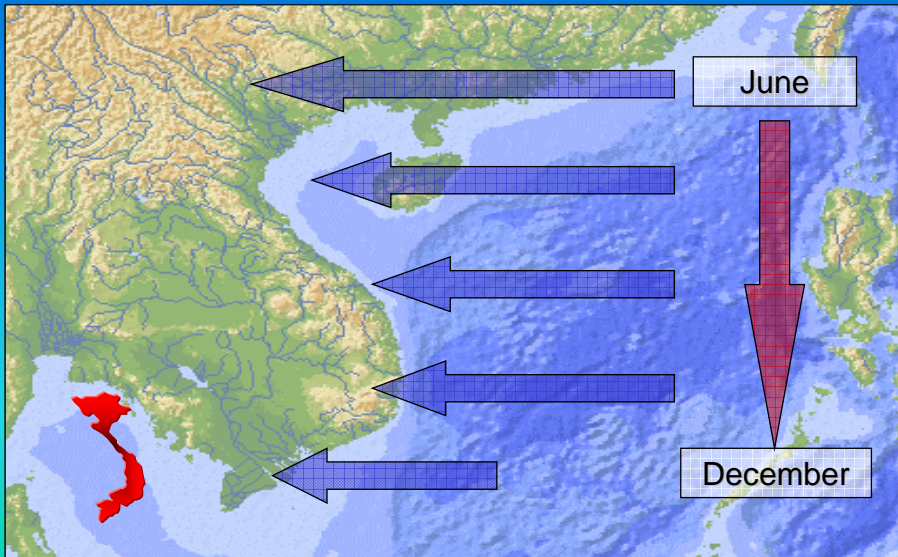


Natural Disasters in Vietnam

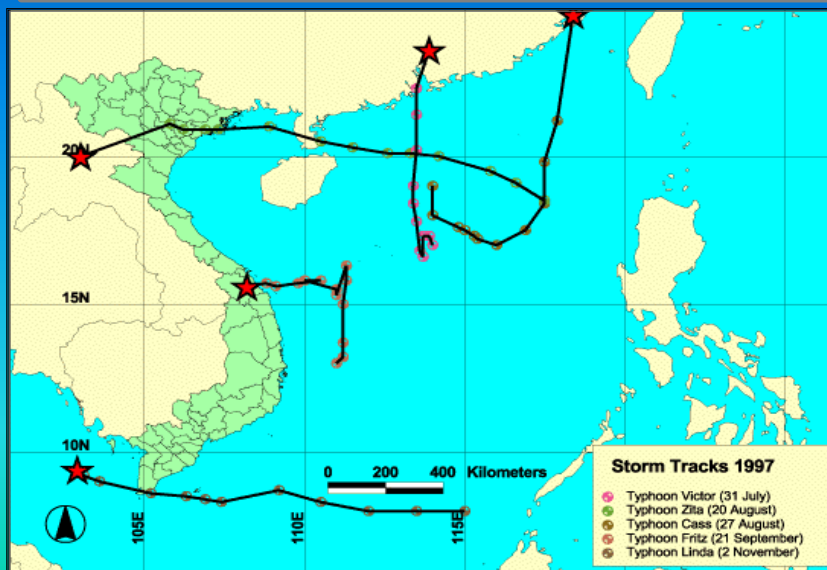


	River Flooding
	Flash floods
	Typhoons
	Storm Surges
Not on map:	
	• Droughts
	• Salt water intrusion
	• Forest fire

Typhoon Tracks



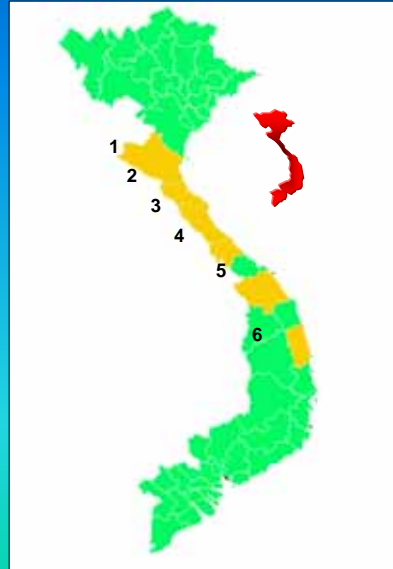
1997 Typhoon and Storm Tracks



1998 July/August Drought in Central Vietnam

Drought Stricken Provinces

1. Nghe An
2. Ha Tinh
3. Quang Binh
4. Quang Tri
5. Quang Nam
6. Binh Dinh

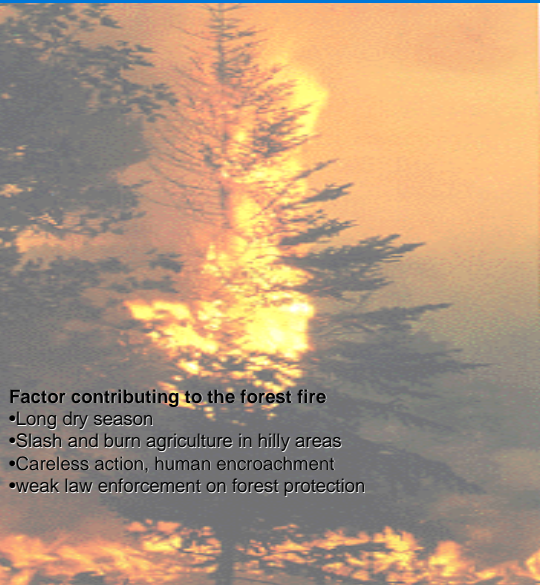


Forest fire are increasing

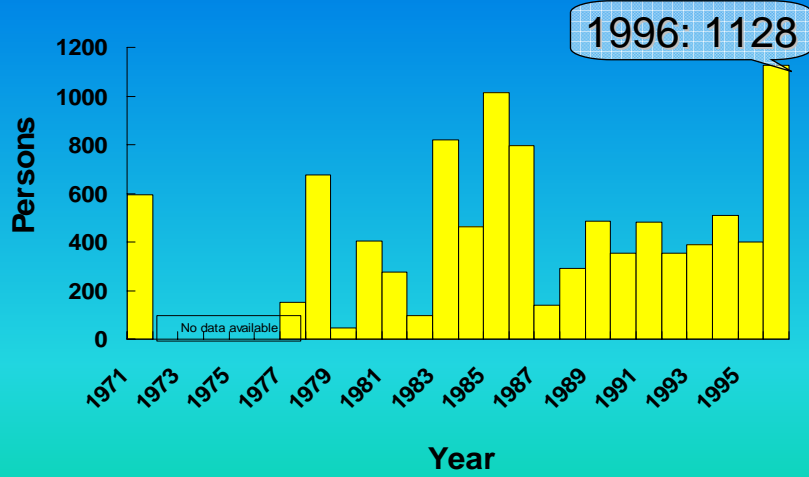
Year	Number of cases	Natural forest (ha)	Planted forest (ha)	economic forest (ha)
1963	325	12,500	750	2,000
1964	458	5,200	3,800	9,000
1965	386	2,200	2,000	4,200
1966	684	4,500	4,000	9,500
1967	542	1,550	1,650	3,200
1968	325	2,100	1,000	3,100
1969	1,250	17,400	16,800	34,200
1970	1,725	19,250	18,750	38,000
1971	932	7,000	4,700	11,700
1972	748	6,150	4,350	10,500
1973	684	4,250	2,550	6,800
1974	655	5,400	4,800	10,200
1975	1,115	4,515	9,985	14,500
1976	2,115	19,250	20,110	39,360
1977	2,515	24,630	24,766	49,496
1978	1,352	7,536	7,356	14,892
1979	1,260	10,220	12,400	22,620
1980	2,540	25,449	20,225	45,449
1981	1,162	10,045	3,831	13,877
1982	850	12,039	1,577	13,616
1983	1,808	54,886	8,404	62,290
1984	1,489	11,500	11,119	22,619
1985	710	4,717	4,323	9,040
1986	1,110	7,723	2,041	9,764
1987	1,810	50,234	13,190	63,424
1988	487	3,390	2,919	6,309
1989	825	3,344	1,614	4,958
1990	895	7,105	15,262	22,367
1991	1,248	3,378.9	6,533.3	9,912.2
1992	1,467	4,188.8	2,500	4,688.8
1993	4,248	3,165.2	3,200	6,365
1994	2,337	4,226.6	4,120	8,321.6
1995	850	6,084	3,600	9,684
1996	2,551	6,540	6,196	12,736
1997	309	307	1,054	1,361
1998	1,685	6,787.7	7,918.8	19,849.2
Total	45,492	367,272.2	259,229.1	610,053.8

Factor contributing to the forest fire

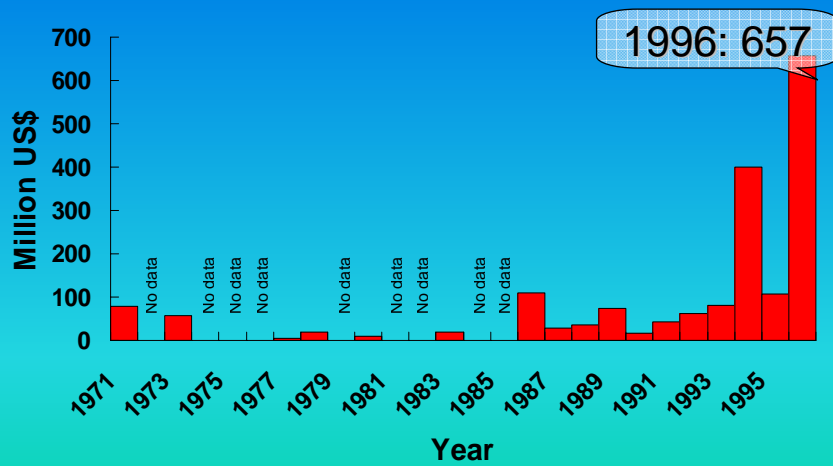
- Long dry season
- Slash and burn agriculture in hilly areas
- Careless action, human encroachment
- weak law enforcement on forest protection

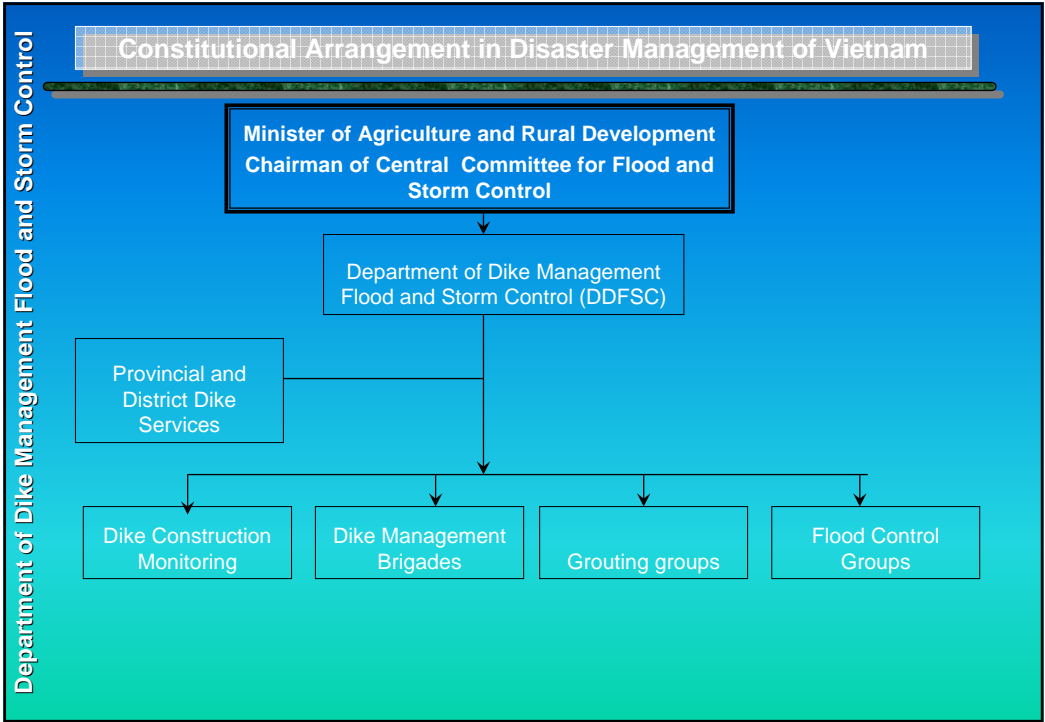
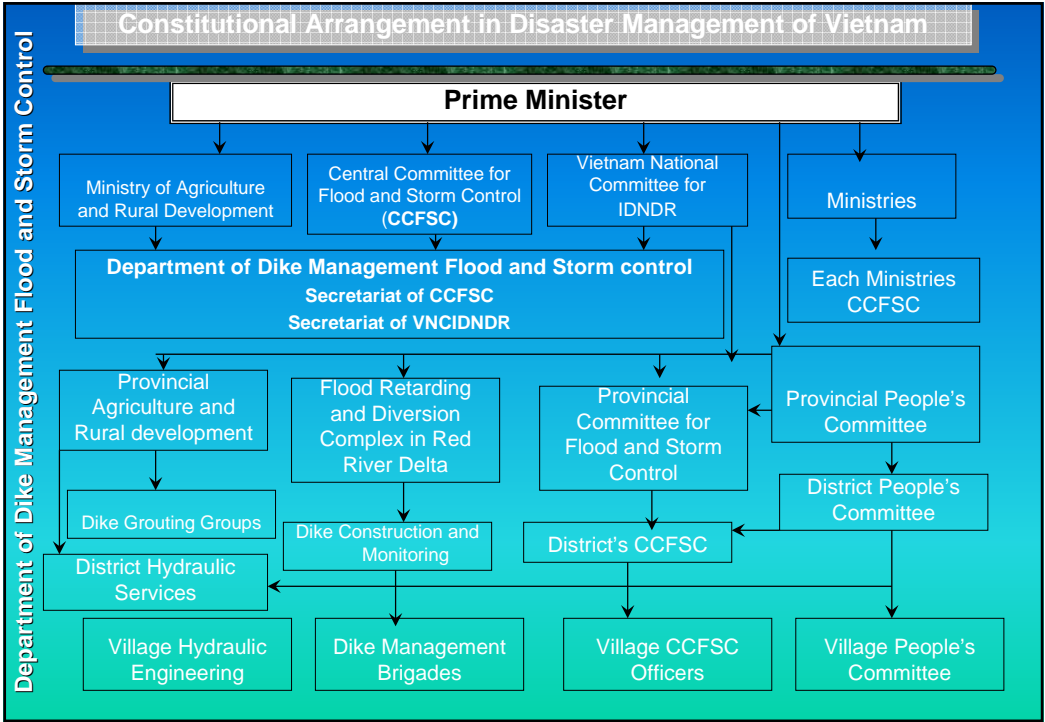


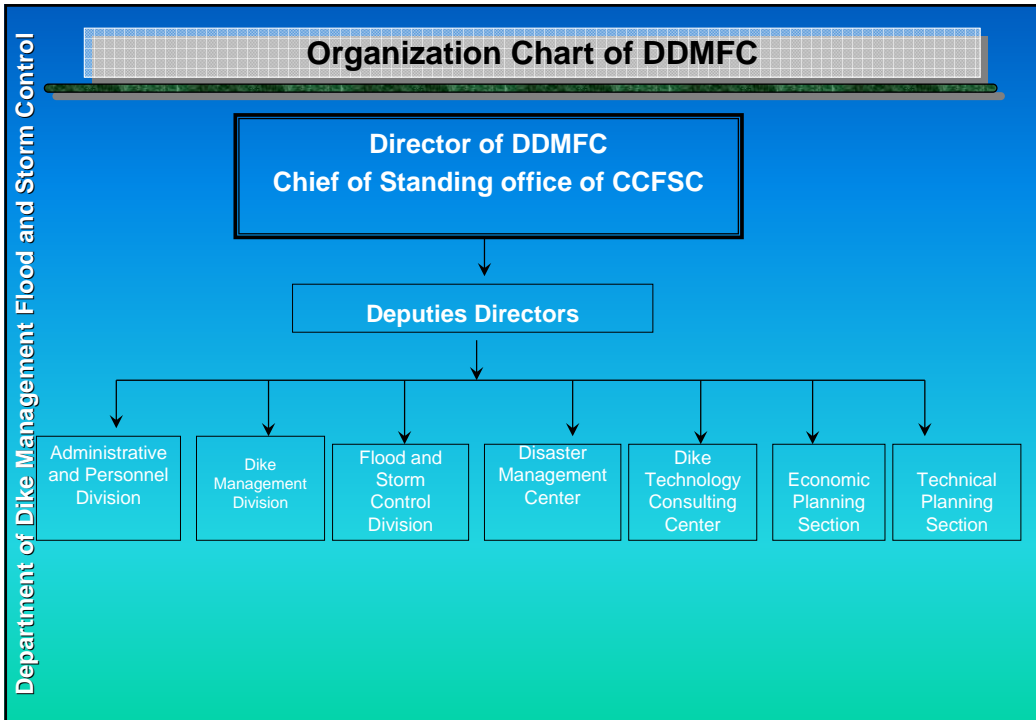
Loss of lives caused by natural disasters per year



Economic loss by year caused by natural disasters







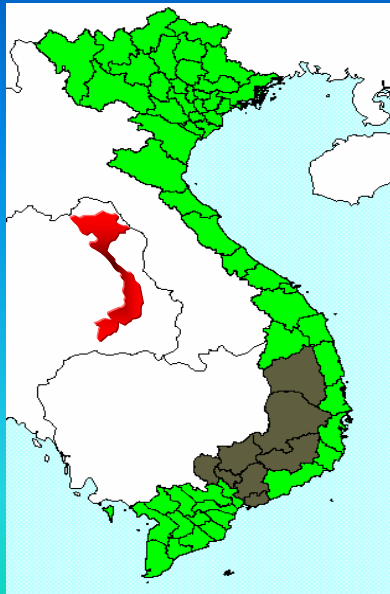
Disaster Management Communication Network

National Disaster Management & Communication Network

- Linking 61 Provinces with CCFSC
- Linking Disaster Management Agencies
- Daily 'health checks' on status of each station
- Reliability and effectiveness proven in 1996 and 1997 typhoon seasons
- Being updated in 1999 to change in to website linking with contain all necessary information on flood storm and disasters situation
- Provide up to date forecasting information on river flooding, storm tracks of Joint Typhoon Warning Center of US Navy

Control

Department

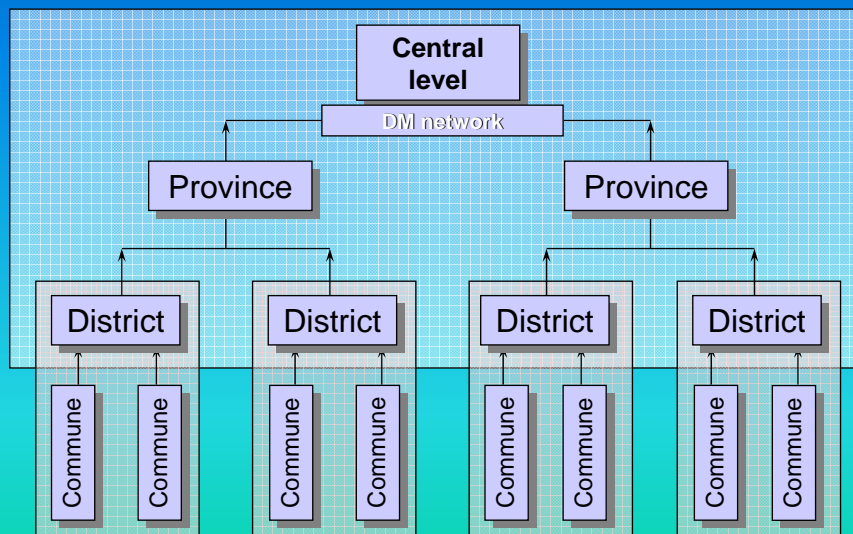


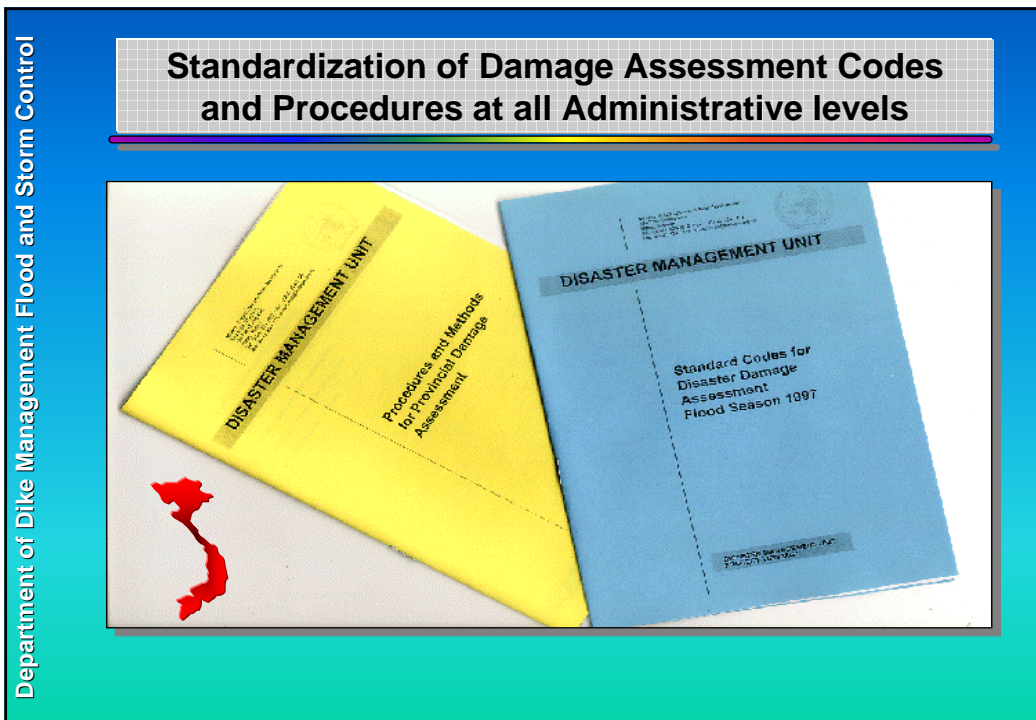
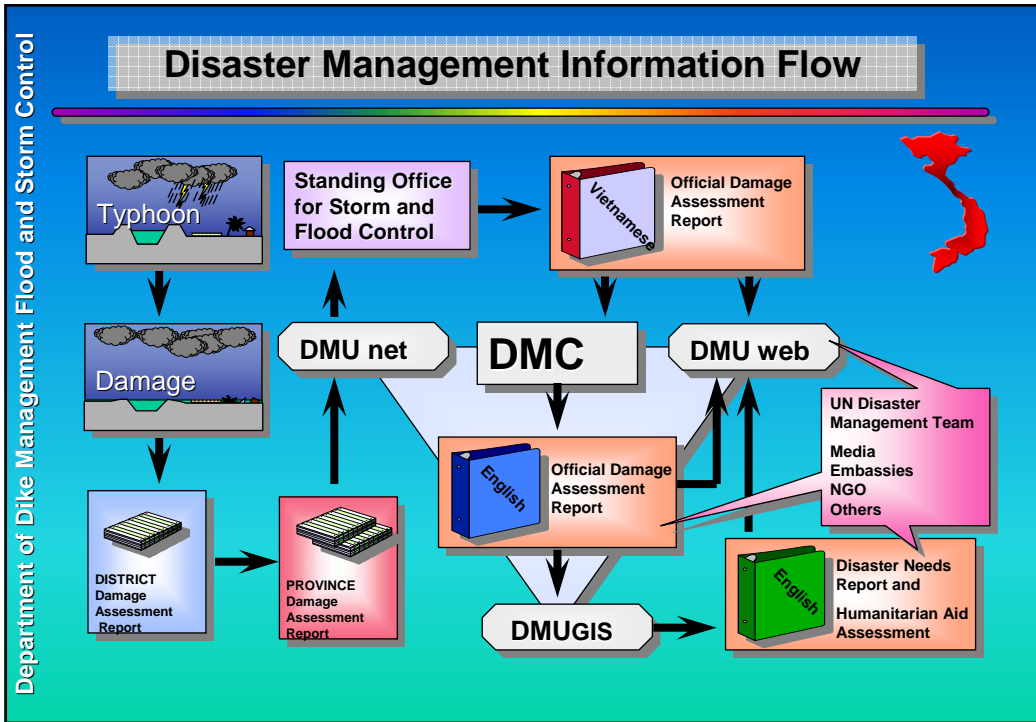
Network Coverage

Status October 1999:
54 out of 61 Provinces

- Provinces connected
- Provinces not yet connected

Damage Assessment Information Flow





Disaster Management damage

- National collection of damage assessment data on District level
- All damage data stored in a National Damage Database
- Excel spreadsheet reporting
- Standardized damage codes
- Standardized damage form



Excel Reporting

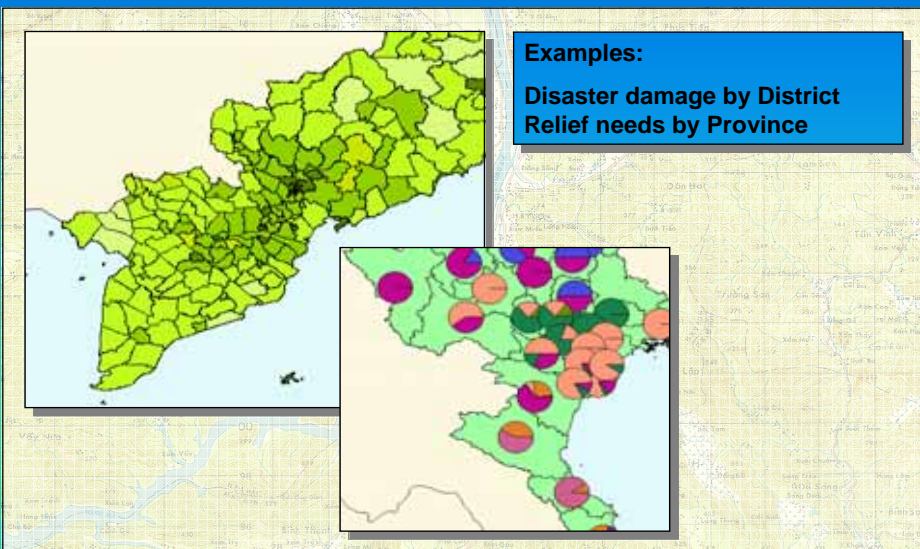
Da Nang		District	Da Nang	Hoa Yang	Totals
		Date			
Damage		Unit	Kiem tra		00-Jan-00
People	11108	People killed on land	No.	0	0
	11109	People killed while at sea	No.	0	0
	11107	People missing	No.	0	0
	11106	People injured	No.	0	0
	11100	People affected	No.	0	0
	11200	Households affected	No.	0	0
	11205	Households in need of relief	No.	0	0
	11204	Households lost all properties	No.	0	0
	11203	Households evacuated	No.	0	0
	11300	Number of communes affected	No.	0	0
Housing	12100	Houses affected	No.	0	0
	12208	Temporary houses	No.	0	0
	12206	Temporary houses damaged	No.	0	0
	12308	Permanent house destroyed	No.	0	0

Excel Reporting

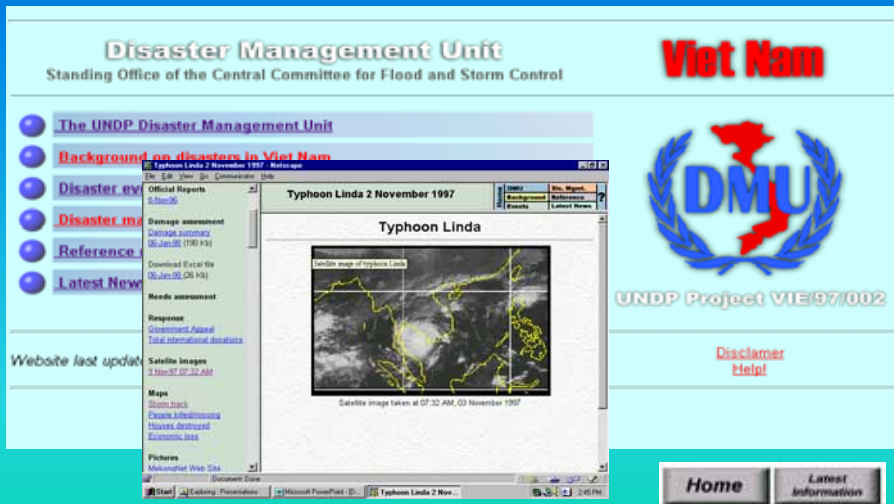
One Reporting format for all provinces to generate Province Specific Damage Assessments Forms on District level

Da Nang		Da Nang	Da Nang	Da Nang	Da Nang	Da Nang
Damage		Units	00-Jan-00			
People	11108	People killed on land	No.	0	0	0
	11109	People killed while at sea	No.	0	0	0
	11107	People missing	No.	0	0	0
	11106	People injured or ill	No.	0	0	0
	11100	People affected	No.	0	0	0
	11200	Households affected	No.	0	0	0
	11205	Households in need of relief	No.	0	0	0
	11204	Households lost all properties	No.	0	0	0
	11203	Households evacuated	No.	0	0	0
	11300	Number of communes affected	No.	0	0	0
Housing	12100	Houses affected	No.	0	0	0
	12208	Temporary houses destroyed	No.	0	0	0
	12206	Temporary houses damaged	No.	0	0	0
	12308	Permanent houses destroyed	No.	0	0	0
	12306	Permanent houses damaged	No.	0	0	0
Medicine	13108	Medicine facilities destroyed	Room	0	0	0
	13106	Medicine facilities damaged	Room	0	0	0
Sanitation	14208	Toilets destroyed	No.	0	0	0
	14108	Water wells destroyed	No.	0	0	0
	14106	Water wells damaged	No.	0	0	0
Education	15100	Pupils affected	No.	0	0	0
	15208	Schools destroyed	Room	0	0	0
	15206	Schools damaged	Room	0	0	0
	15308	Desks destroyed	No.	0	0	0
	15408	Books and notebooks destroyed	No.	0	0	0
10000	Economic Loss - Humanitarian	MVND	0	0	0	
Agriculture	21101	Agricultural area inundated with fresh water	Ha.	0	0	0
	21102	Agricultural area inundated with salt water	Ha.	0	0	0
	21201	Paddy area inundated	Ha.	0	0	0
	21208	Paddy destroyed	Ha.	0	0	0
	21206	Paddy damaged	Ha.	0	0	0

DMGIS Thematic Mapping



DMU web



Disaster Management training

- **National Level**
Damage Assessment
Needs Assessment
- **Provincial Level**
Disaster Management
Emergency Communications
- **District Level**
Damage Reporting
Needs Reporting
- **Commune Level**
Disaster Preparedness Training
Red Cross First Aid Training



AID COORDINATION



Facilitation of International Humanitarian Aid

- Identifying target areas and recipients
- Monitor Aid Distribution
- Report on Aid Distribution

Aid for Typhoon victim in 1997

● USA (OFDA)	US\$	65,000
● USA (Embassy)	US\$	25,000
● USA (DOD)	US\$	460,000
● UN-DHA:	US\$	50,000
● UNDP-Vietnam:	US\$	150,000
● Gov. of Norway:	US\$	50,000
● Gov. of New Zealand	US\$	62,000
● Gov. of Luxembourg	US\$	100,000
● Danda	US\$	460,000
● Gov. of Austria	US\$	38,000
Total:		US\$ 1,460,000

The performed activities at DMC

Maintain the Hydro-Meteorological reports during flood -storm season

- Maintain the linkage between Forecasting agency and CCFSC
- Interpretation of rainfall data, water level data of major rivers from hydrological observation network.
- Tropical Storms information
- Update the hydro-meteorology data base
- Prepare the reports

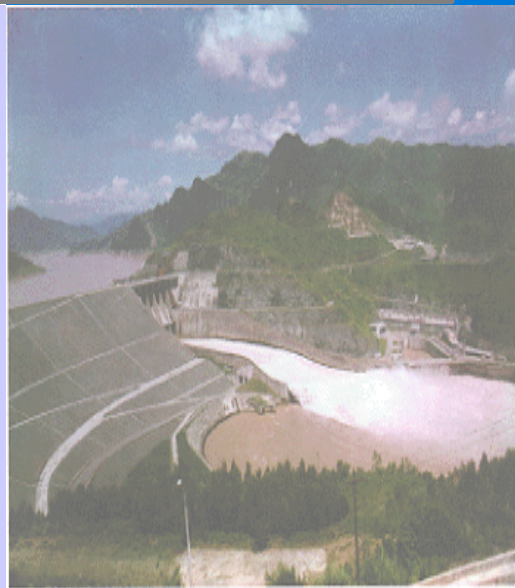


The performed activities at DMC

Daily flood forecasting bulletin for the operation of Hoa Binh Reservoir

The biggest Reservoir in SEA for Power Generation and Flood Control. It generates more than half of Country's Electricity Output; importance for Flood and Water Disaster Management of Red River Delta.

- Perform the hydraulic calculation to forecast the Incoming discharge, water level of the Reservoir, Rivers down stream of the Dam
- Base on the result of the calculation, synoptic condition and the status of flood control infrastructure down stream to produce the final consultation bulletin to Director of the DDMFC
- Final decision on the operation of reservoir for flood control purposes will be issued by director of the DDMFC or the Vice Minister



The performed activities at DMC

Disaster Assessment and relief coordination

- Collecting and processing the information on disaster damage of the affected areas
- Assess the manignitude of hazard, prepare the situation reports.
- Assist the chief of the office coordinate the response activites base on the on going disaster situation.
- maintain the damage record of the events
- Writing the annual report on disasters situations.
- Codinate the relief activities during emergency operation

Damage caused by Tornado from 1979 to 1998 in

Category	item damaged	unit	North mountainous zone	North midland, plain, coastal	North central zone
People	Killed	No.	82	178	262
	Injured	No.	414	1,346	716
	Missing	No.	5	41	23
Housing	Collapsed	House	3,282	6,273	10,172
	Submerged and damaged	House	30,056	43,162	61,849
School	Collapsed	Room	403	709	1,025
	Submerged and damaged	Room	448	1,046	1,516
Clinic and hospital	Collapsed	No.	10	8	87
	Submerged and damaged	No.	51	37	232
WareHouse	Collapsed	No.	4	43	279
	Submerged and damaged	No.	13	36	50
Office	Collapsed	No.	29	43	35
	Submerged and damaged	No.	133	80	227
Agriculture	Paddy field submerged	Ha	5,855	44,406	50,998
	+ Completely lost	Ha	2,834	838	10,524
	Dry crop submerged	Ha	7,816	29,922	12,710
	+ Completely lost	Ha	1,367	588	17,842
	Food damaged by water	Ton	277	79	70
	Seedling damaged by water	Ton	55	0	0



The performed activities at DMC

Research works, Project coordination, workshops, conferences on disaster management

- Research project on Flooding in Vietnam
- Project on disaster management's training material.
- Project on Understanding Extreme Climate Event in Vietnam with ADPC
- Annual training workshop for disaster management at provincial level and districts level.
- Coordination for UNDP/DANIDA Mangrove Forest Rehabilitation Project

Department of Dike Management Flood and Storm Control

