





The Asian Forum on Disaster Management and Climate Change Adaptation

Hyogo, Kobe, Japan, April 21-26, 2009

Vannareth SETH

Ministry of Water Resources and Meteorology

Department of Meteorology

Email : vannareth2009@gmail.com



DOM / MOWRAM

Outline

- Feature of Natural Disaster in Cambodia
- National Disaster Management Organization and Coordination System
- Improvement of National Disaster Management Capacity in Communities and Local Societies
- Climate Change Adaptation in Natural Disaster Management

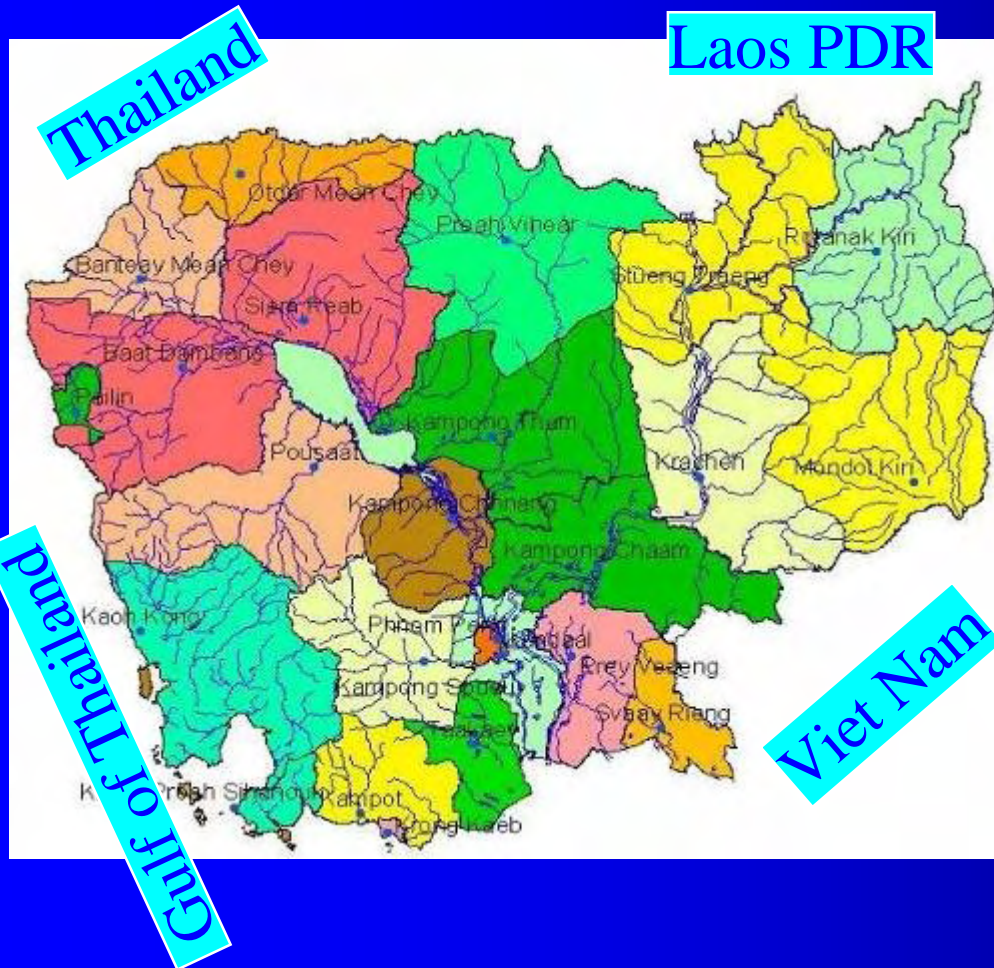


Outline

- Feature of Natural Disaster in Cambodia
- National Disaster Management Organization and Coordination System
- Improvement of National Disaster Management Capacity in Communities and Local Societies
- Climate Change Adaptation in Natural Disaster Management



Country information



- Total area: 181,035 km²
- Population: 13,388,910
(Female 52%, Male 48%)
- 85 % of population are farmers.
- Density: 74.7 person/ km².
- Average growth: 2.4%.
- GDP per capita US\$600
- Rice is the most important crop.
- Rice yield is 2.8 tons/ha.

The Natural Disasters in Cambodia (1)

- **Possible Natural Disasters : Flood, Drought, Forest fire, Landslide, Tropical Cyclone, Thunderstorm, Lightning, Heavy rain and Storm surge.**
- **Recent flood : Flash flood (2000, 2006, 2007 and 2008), Flood plan (almost every year), River flood (1984, 1986, 1999, 2000, 2001 and 2002).**
- **Recent drought : Agriculture drought (almost every year), Hydrological drought (1997, 1998, 2003, 2004 and 2005), Climate drought (almost every year).**



Flooding Issues



Collapse of embankment of national road No 1 by overland flow from right bank side of Mekong river during the flood in year 2000



Bridge on the National Road 6A was collapsed by year 2001 Mekong River Flood, in Kompong Cham Province



DOM / MOWRAM

Flooding Issue



DOM / MOWRAM

Issues of draught

- Irrigation system protected by draught



- Draught in 2004



The Natural Disasters in Cambodia (2)

- **Recent forest fire : Forest fire (1997 and 1998) in the Kirirum mountain as the small scale disaster.**
- **Recent Landslide : Landslide (2000, 2002, 2007 and 2008).**
- **Recent Tropical Cyclone : Typhoon Lida (1998)**
- **Recent Thunderstorm : Thunderstorm (almost every year)**



Issues of thunderstorm and strong wind



- At Kompong Sam



- Tornado effected on April 19, 2006



DOM / MOWRAM

Issues of Strong Wind



- Strong Wind on April 19, 2006



- Water Spout on August 29, 2006



DOM / MOWRAM

The Natural Disasters in Cambodia (3)

- **Recent Lightning : Lightning (every year)**
- **Recent Heavy Rain : Heavy rain (every year)**
- **Recent Storm surge : Storm surge (2000, 2001 and 2008)**



Outline

- Feature of Natural Disaster in Cambodia
- National Disaster Management Organization and Coordination System
- Improvement of National Disaster Management Capacity in Communities and Local Societies
- Climate Change Adaptation in Natural Disaster Management



National Cambodian Disaster Management Consist (1)

- Prime Ministers of the Kingdom of Cambodia (PMO) Co-Presidents**
- Ministry of Interior (MINT) Co-Vice Presidents**
- Council of Ministers Office (CMO) Co-Members**
- Ministry of National Defence (MND) Co-Members**
- Ministry of Environment (MOE) Member**
- Ministry of Economy. and Finance (MEF) Member**
- Ministry of Social Welfare, Labour and Veterans (MSWLV)
Member**
- Ministry of Public Works and Transport (MPWT) Member**
- Ministry of Agriculture, Foress and Fisheries (MAFF) Member**
- Ministry of Foreign Affairs and International Co-operation
(MYAIC) Member**



DOM / MOWRAM

National Cambodian Disaster Management Consist (2)

-Ministry of Health (MOH)	Member
-Ministry of Planning (MOP)	Member
-Ministry of Information (MINF)	Member
-Ministry of Education, Youth and Sport (MEYS)	Member
-Ministry of Cults and Religious Affairs (MCRA)	Member
-Ministry of Rural Development(MRD)	Member
-Ministry of Industry, Mines and Energy (MIME)	Member
-Cambodian Development Council (COD)	Member
-Secretary of State, Women's Affairs (SSWA)	Member
-Cambodian Red Cross (CRC)	Member
-Permanent Secretary NCDM (PS)	Secretary



National Cambodian Disaster Management –General Secretariat

Department of Emergency Co-ordination and Rehabilitation (ECR)

Department of Emergency Preparedness and Training (EPT)

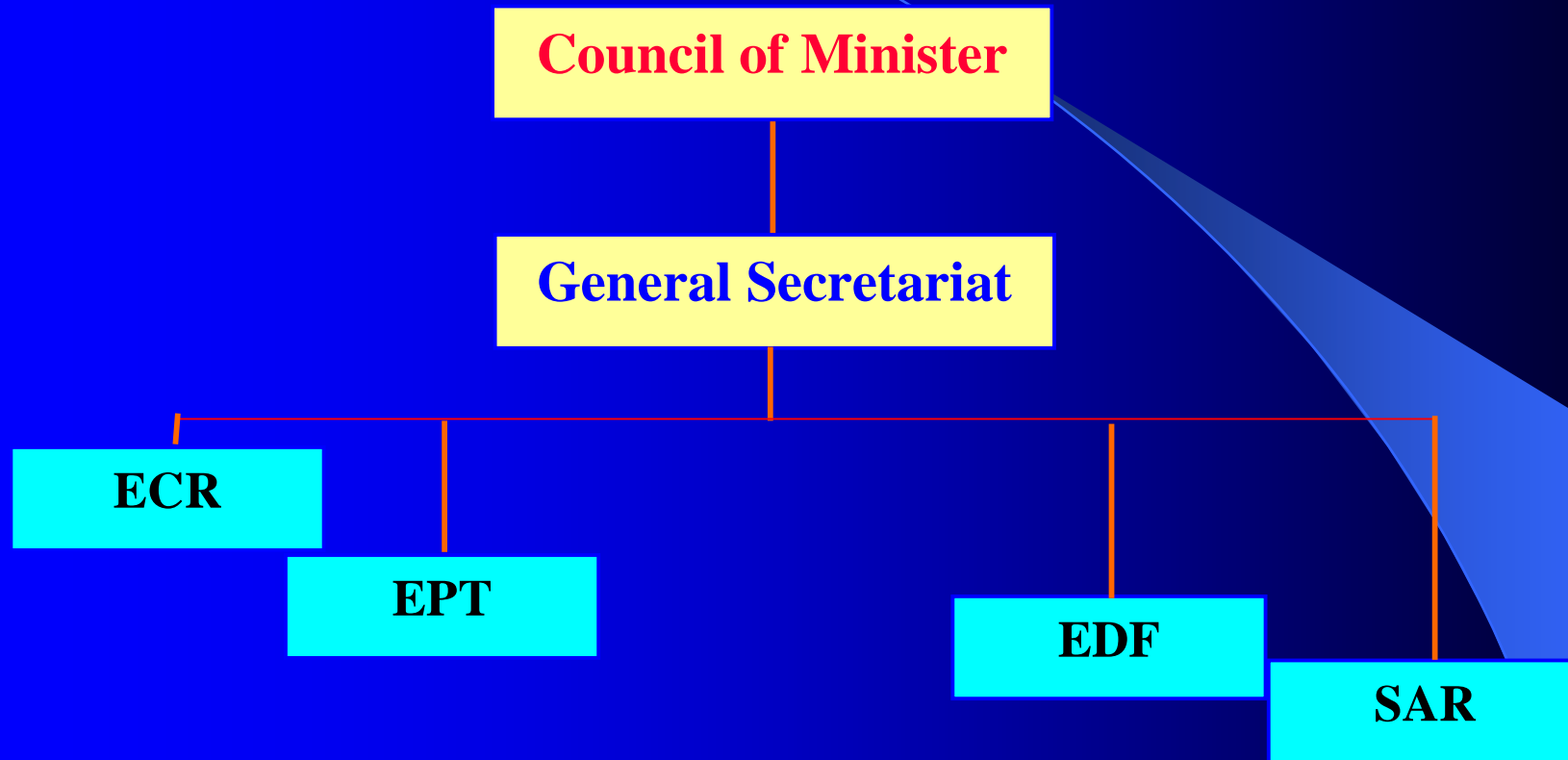
Department of Administration and Finance (AdF)

Department of Search and Rescue (SAR)



DOM / MOWRAM

Organization Structure of NCDM



Strategy of NCDM (1)

An institutional philosophy based on understanding and using the terms of hazards analysis, vulnerability analysis, emergency management and disaster reduction.

Emphasis on linking emergency management to the national development strategy

Promotion of support for and implementation of the IDNDR Yokohama Strategy and Plan of Action for a Safer World.

Emphasis on the coordination function of NCDM.

Adoption of a partnership approach with other actors in the field, including government Ministers, Departments, Authorities and Agencies, technical and academic institutions (local and international), inter-governmental bodies, donors, local and international NGOs and UN agencies.



Strategy of NCDM (2)

Intensification of collaborating relations between CRC and NCDM in terms of disaster reduction and emergency response operation.

Development of network of collaborating academic center.

Focus on key issues as identified by the members of NCDM.

Adoption of a role for NCDM in general safety promotion.

Adoption of a role for NCDM in advocacy for the protection of victims, emergency response personnel and infrastructure in emergency situations.

Promotion and encouragement of a spirit of self-reliance and mutual benefit in government agencies and local communities.



Challenges

- **An institutional philosophy based on understanding and using the terms of hazards analysis are limited.**
- **Emphasis on linking emergency management to the national development strategy is not clearly defined.**
- **System of information flow, coordination concerned during disaster are not clearly established in advance.**
- **Less connection and cooperation between NCDM within Ministries.**
- **Early warning announcement system and information distribution system are under Ministry of Water Resources and Meteorology. And all information or announcement giving two ways MOWRAM direct to mass media and to NCDM and NCDM is not well established.**



Resources in Cambodia for the Asian Country

- **Training on Search and Rescue in Singapor.**
- **Study and Visiting on Natural Disaster Management in Korea.**
- **Training on Search and Rescue in Cambodia.**



Outline

- Feature of Natural Disaster in Cambodia
- National Disaster Management Organization and Coordination System
- Improvement of National Disaster Management Capacity in Communities and Local Societies
- Climate Change Adaptation in Natural Disaster Management



Sub-National Disaster Structure

Provincial Communities

District Communities

Strategy of Sub-National Disaster (1)

Work primarily through the Provincial and Municipal CDM.

Ensure that the provision of emergency and humanitarian relief is timely, relevant and well coordinated.

**Co-operate with local community organizations,
Encourage national programs for emergency management to support local initiatives,**

Ensure that emergency response can be used to promote long-term development,

Provide support for rehabilitating damaged infrastructure,



Strategy of Sub-National Disaster(2)

Use all available resources in the local area before asking for assistance from higher authority,

Broaden activities to include sectors other than government in disaster reduction activities,

Assess and analyse vulnerability of communities, their environment and their infrastructure to specific hazards,

Strengthen and streamline procurement, supply and personal procedures,

Promote local purchasing and employment of local expertise.



Challenges

- **An institutional philosophy based on understanding and using the terms of hazards analysis are limited.**
- **Emphasis on linking emergency management to the local level development strategy is not clearly defined.**
- **System of information flow, coordination concerned during disaster are not clearly established in advance.**
- **Early warning announcement system and information distribution system are not respond.**



Connection District Committee Level



After disaster from DoM are getting all information from local communities



- District Disaster Committee (2006)



- Local Provincial Disaster Committee (2006)



DOM / MOWRAM

Resources in Cambodia for the Asian Country

- **Training on Natural Disaster Management in Communities and local area in Philippine.**
- **Training on Natural Disaster Management in Communities and Local Area in Thailand.**

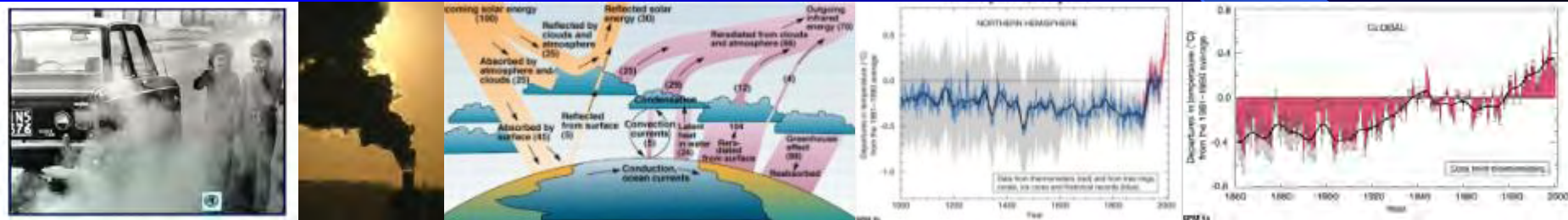


Outline

- Feature of Natural Disaster in Cambodia
- National Disaster Management Organization and Coordination System
- Improvement of National Disaster Management Capacity in Communities and Local Societies
- **Climate Change Adaptation in Natural Disaster Management**



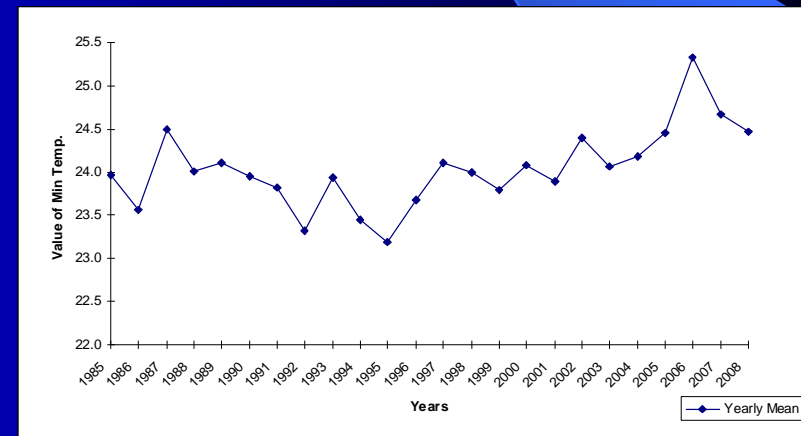
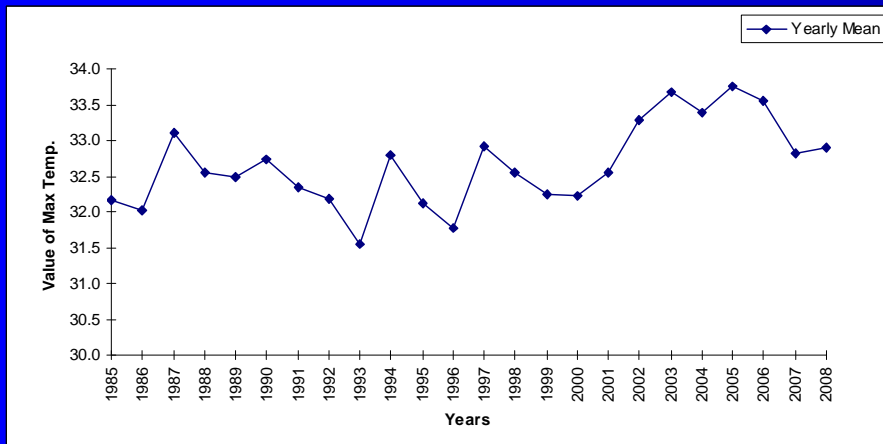
Water and Climate in Cambodia



DOM / MOWRAM

Climate Change in Cambodia (1)

- Annual Max & Min temperature has **increased about 0.5°C** over the past fifty years
- Max & Min temperature of the last 24 years is **higher than** that of previous period

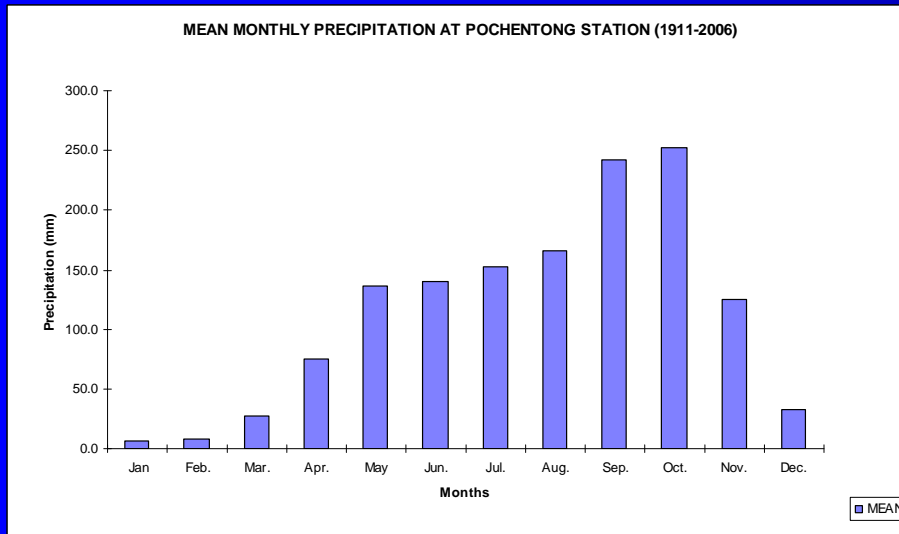


Climate Change in Cambodia (2)

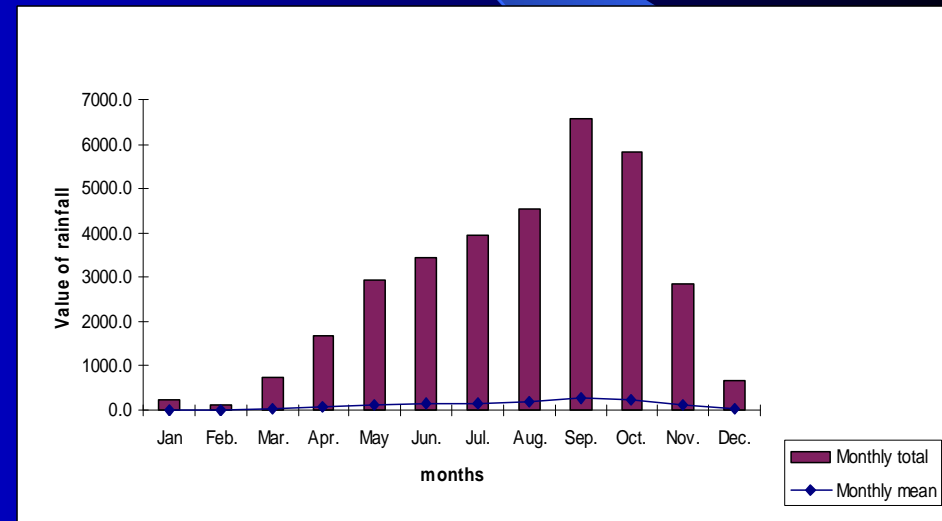
- **Rainfall increases in rainy season (Sep. to Oct.), decreases in dry season.**
- **More heavy rainfalls causing severe floods.**
- **Droughts happen every year in most regions of the country.**



Monthly Precipitation at Phnom Penh 1911-2006

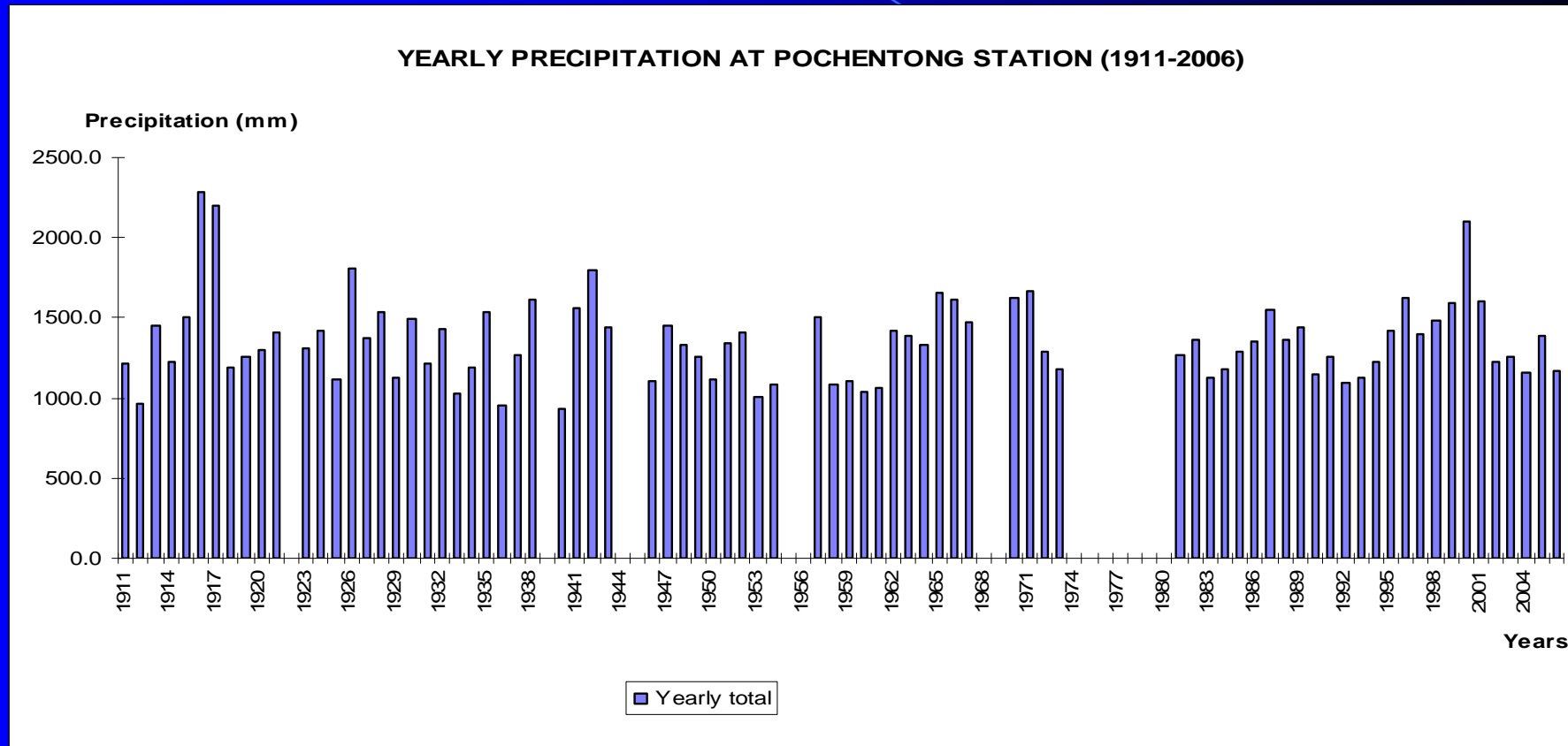


Monthly Precipitation at Phnom Penh 1985-2008



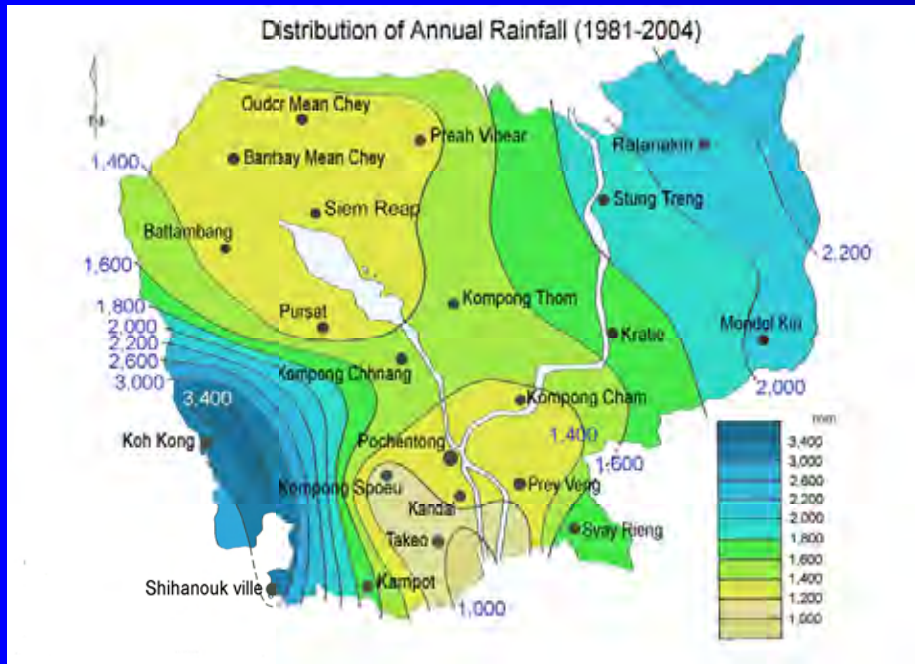
DOM / MOWRAM

Precipitation at Phnom Penh from 1911-2006



DOM / MOWRAM

Distribution of Annual Rainfall

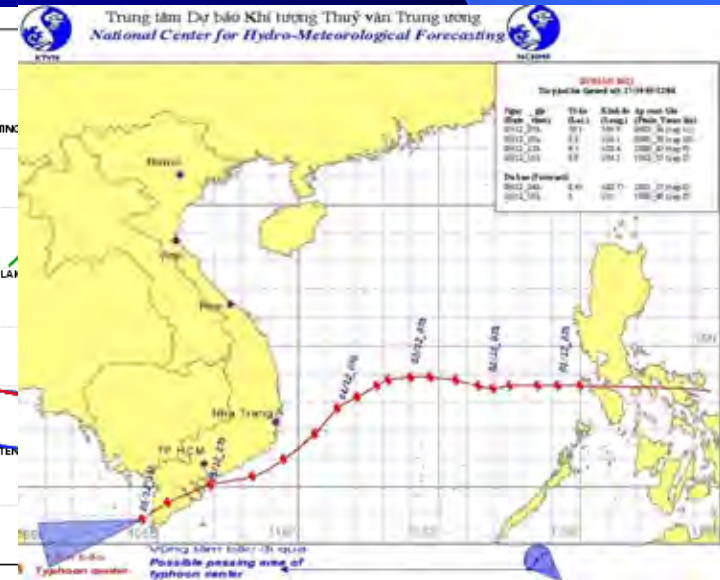
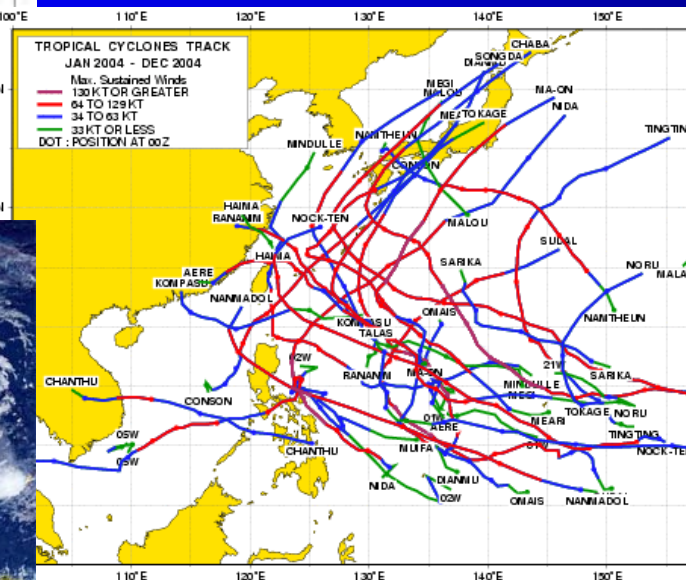
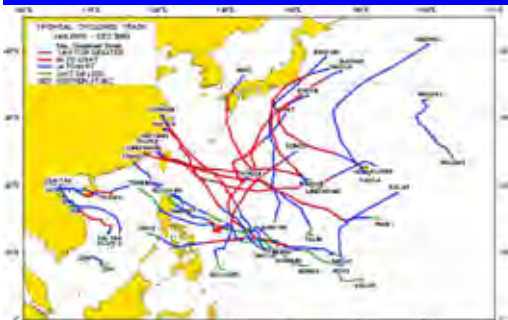


- The average of annual rainfall varies from 1100mm to more than 4000mm
- Flat region : 1000-2000mm
- Northeastern : 1800-3000mm
- Coastal region : 2600-4000mm
- Bokor mountain : 4650mm



Climate Change in Cambodia (3)

- Typhoons occur more frequently, with higher intensity.
- Typhoon trajectory moves southward, typhoon season shifts to later months of the year.



Water Resource Potential in Cambodia

- Referring to the previous study, the promising of Water Resources Project has a potential as follows:

● Water Resource in ha	Power in MW	Irrigated Area
● Main Stream	10,800	734,000
● Mekong Tributaries	2,727	253,000
● Mekong Flooded Area	-	179,000
● Tonle Sap Tributaries	306	358,900
● Outside Mekong Basin	1,146	142,000
● Total	14,979	1,667,300

- The total potential of water resource in Cambodia is estimated with minimizing risk of environmental problem, at 3,200 MW.



DOM / MOWRAM

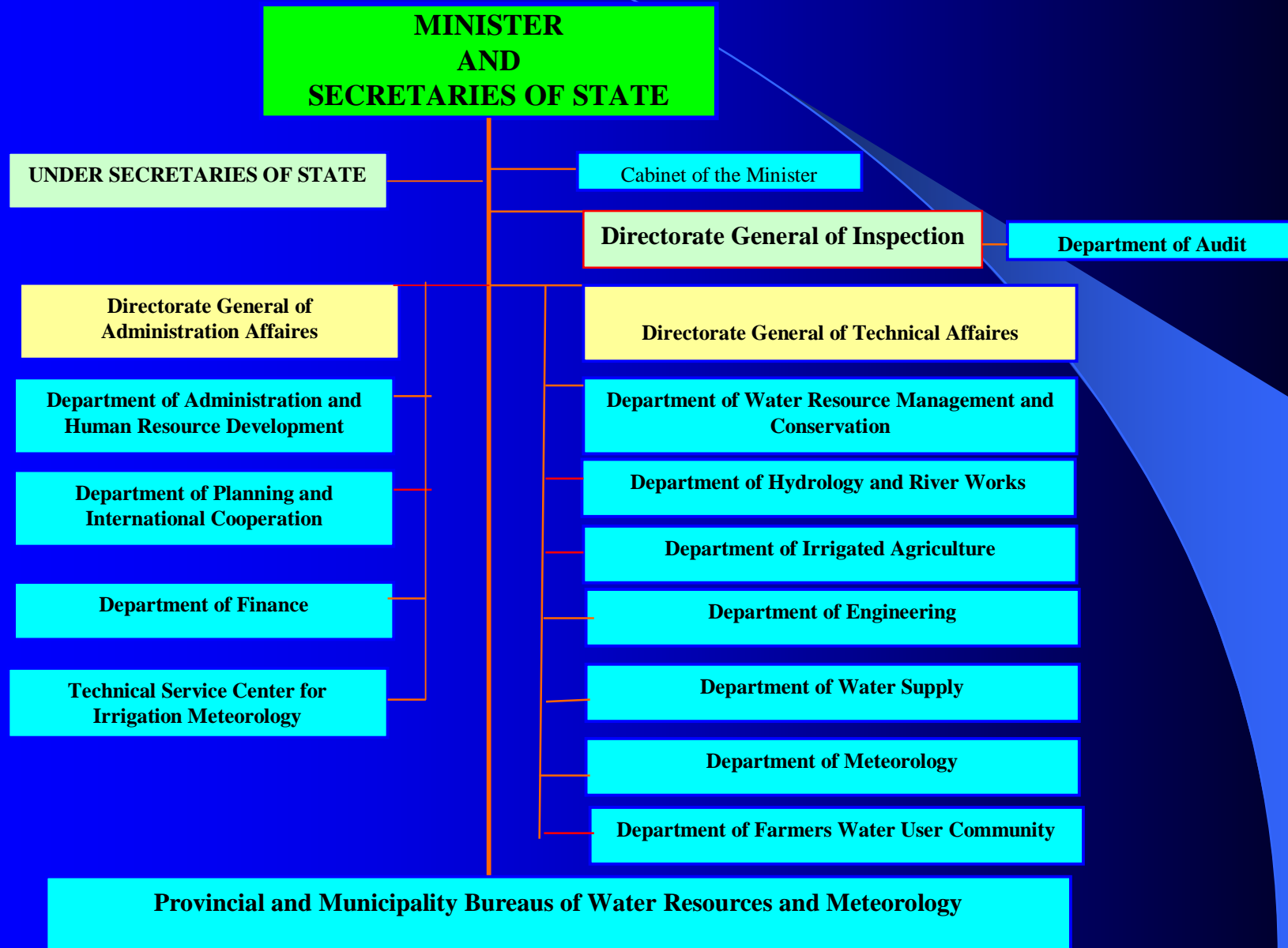
IMPACTS OF CLIMATE CHANGE

- Agriculture;
- Water Sector;
- Forestry;
- Fisheries;
- Coastal Zone;
- Ecosystems
- Wet land systems

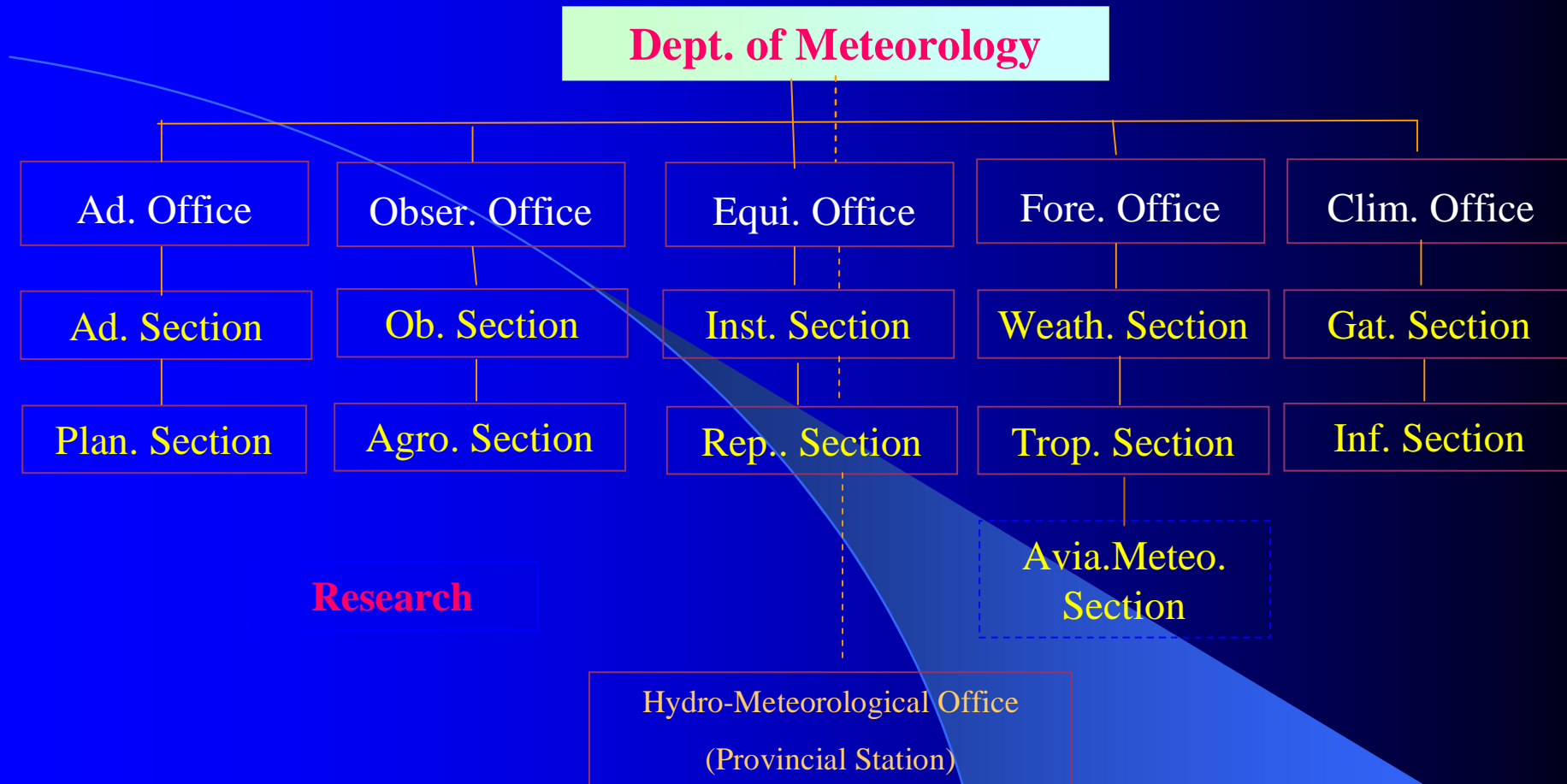


DOM / MOWRAM

ORGANIZATION STRUCTURE OF MOWRAM



Structure of Department of Meteorology



Main Activities of Department of Meteorology

- To Prepare the plan for rehabilitation and development the meteorology, oceanographic and seismic throughout the country.
- To establish and manage the meteorological, oceanographic and seismic stations.
- To observe the weather condition for the purpose to serve for all concerning sectors.
- To forecast for the need of various organizations and inform in advance the natural disaster.
- Provide consulting services on meteorology, oceanographic and seismic.



Main Activities of Department of Meteorology

- Undertake studies of scientific researches on meteorology, oceanographic and seismic.
- Undertake studies for the applied advanced science and technology, development and transfer technologies in meteorology, oceanographic and seismic.
- Take in the preparation of rule, procedure and technology standards of meteorology, oceanographic and seismic.



Strategic Plan of DOM

- . Additional Automatic Weather Station (AWS)**
- . Automatic Data Collection System**
- . Dissemination of meteorological and other data**
- . Numerical Weather Prediction System**
- . To install weather radar station**
- . Weather Radar Network**
- . Upper Air Observation System**
- . To install Sonde or Windprofiler network;**



Challenge on Climate Change Adoption

- Our system do not have modernized equipment.
- Problems
 - * need local warning to the people & farmers
 - * no upper air observation
- There is an urgent need for institutional strengthening, include seismology and oceanography.
- Lack of budget for the development of station network.
- No funding for climate change adaptation.
- Lack of people involvement for climate change adaptation.



Resources in Cambodia for the Asian Country

- **Training on Numerical Weather Prediction in Thailand.**
- **Training on Climate Forecasting in Vietnam.**
- **Seminar on tsunami understanding in Singapor.**
- **Training on tsunami modeling in Thailand.**
- **Seminar on Climate Change impact into irrigation system in Thailand.**



**Thank you for your
attention**



DOM / MOWRAM





DISASTER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN INDONESIA

Dr. SYAMSUL MAARIF

Chief

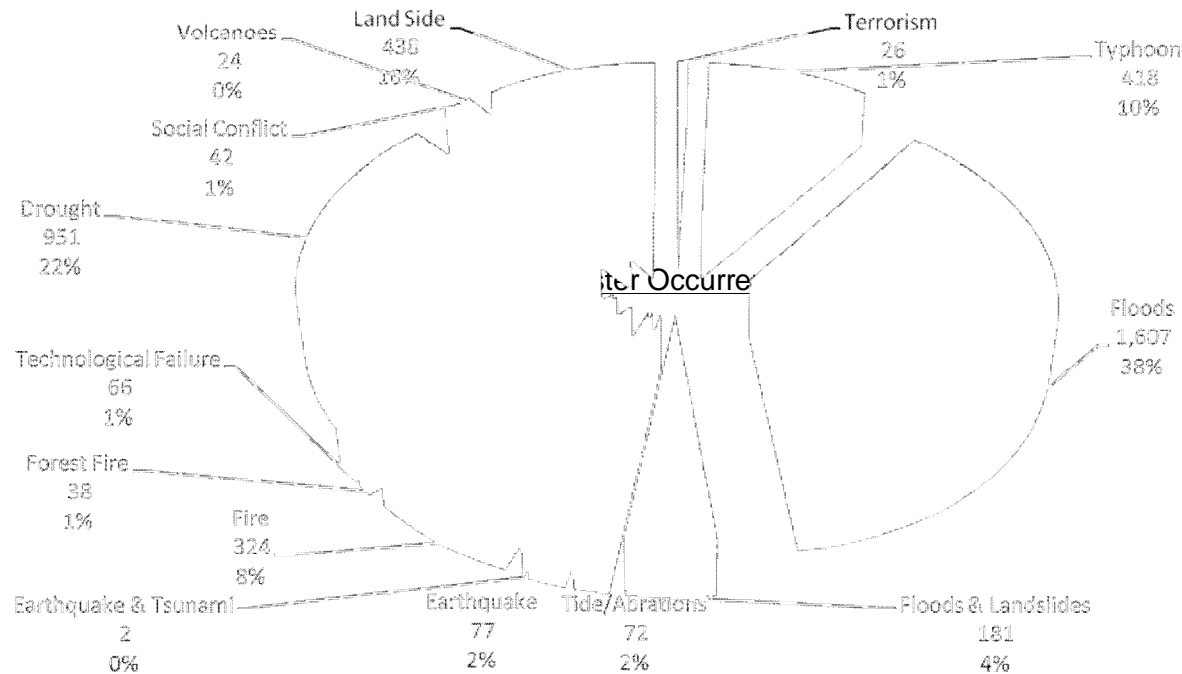
**NATIONAL AGENCY FOR DISASTER MANAGEMENT
(BNPB)- INDONESIA**

Content



1. Features of Disasters in Indonesia
2. Disaster Management Organization Systems
 1. Current Situation
 2. Challenges
 3. Efforts and Trial being made
 4. Resources for other countries
3. Improvement of Disaster Management Capacity in Communities and Local Societies
 1. Current Situation
 2. Challenges
 3. Effort and Trial being made
 4. Resources for other countries
4. Climate Change Adaptation in Disaster Management
 1. Organization concerned in Indonesia
 2. Challenges and Efforts
 3. Resources for other countries

1. Features of Disaster in Indonesia (2002-2008)



Climate related disasters in Indonesia

- drought, flood, landslides, wild fires and wind storm count for 50.3% of the number of events,
- contributing to total losses from disaster:
 - 68.3% of the total number of affected people,
 - 7.9 % of total death,
 - 25.1% of total property damage



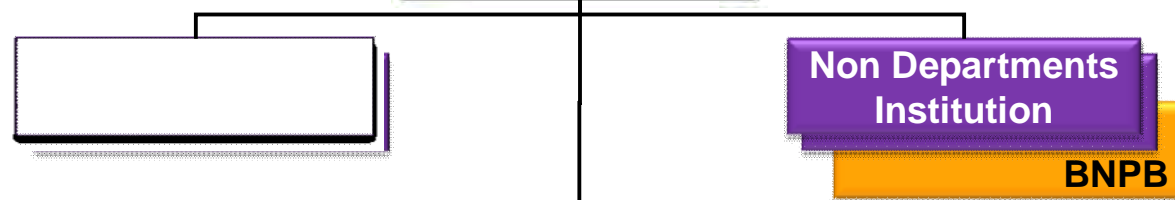
Disaster Management Organization System in Indonesia

2.1 Disaster Management Organization System



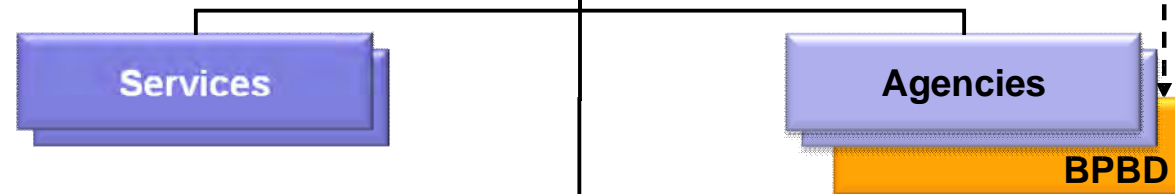
National

PRESIDENT RI



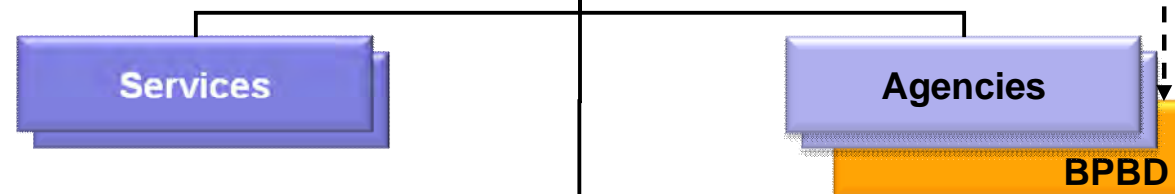
Provincial

GOVERNOR



District/Municipal

BUPAT/MAYOR



Sub District

CAMAT



Village

Head of Village



2.2 Challenges for Establishing and Managing Effective Disaster Management Organization



- Shifting of paradigm in disaster management, from response to disaster risk reduction.
- Decentralization in disaster management authority, there are some gap between central and local level.
- Changing of Disaster Management Organization System.
- Lack of resources for disaster management in local levels, such as:
 - Infrastructure
 - Expertise
 - Budget allocation

2.3 Efforts and Trials being made to Establish and Manage Effective DM organization



- Set up New Disaster Management Systems (enactment of DM Law No.24/2007).
- Establish disaster management organizations at all levels (role and responsibility)
- Develop and socialize national system for disaster management so that DM organizations know how and what to contribute to the DM system.
- Assist Local DM authority by providing guidance, training, exercise, technical assistance.
- Strengthening Local Government in establishing DM infrastructure (EOC, and ICT systems)
- Capacity building for human resources and institutions related to DM, including community level
- Establish coordination mechanism among relevant stakeholders

2.4 DM Resources in Indonesia for the Other Countries



- BNPB (National Agency for Disaster Management)
 - Personnel, Equipment, and Logistic
- BASARNAS (National Agency for Search and Rescue)
 - SAR Team and Equipment
- TNI (Indonesia Armed Forces)
 - Personnel, Aircrafts, ships for SAR, distribution of medical purpose
- POLRI (National Police)
 - Identification Team, Personnel
- Ministry of Health
 - Medical Team and supply
- PMI (Indonesian Red Cross)
 - Medical Team and supply



Improvement of Disaster Management Capacity in Communities and Local Societies

3.1 Current Situation of DM in Communities and Local societies



- Significant awareness on DM/DRR at community/local level
- Participatory CBDRM/CBDRR in various parts of the country
- Early warning system established at community level
- Local platform/forums established to strengthen coordination and ensure integrated planning and action
- Most vulnerable ones are often the poorest and lack of capacity to invest in long-term protective preparedness measures
- Vulnerable communities are dependent on national or international institutions and formal assistance mechanism
- Provision of DRR supports are mostly planning and training exercises for response preparedness

3.2 Challenges for Improving DM Capacity in Communities and Local Societies



- Awareness on DM/DRR at community/local level is uneven
- EWS in place but lack of knowledge on how to react to the early warning information
- Lack of capacity and resources (human, financial and infrastructure)
- Emphasis more on response rather than on risk management /reduction
- Local agency for disaster management is currently in the process of being established (in some parts of the country)
- Lack of awareness on local risk and vulnerability

3.3 Efforts being made in order to improve DM Capacity in Communities and Local Societies



- Increase knowledge and capacity of local community to identify their risks and vulnerabilities
- Increase awareness and improve preparedness that is applicable for practical action
- DRR support should also include the empowerment of communities and the provision of longer-term investment
- Stronger political commitment and financial support to build capacity of community
- Establish mechanism to scale-up community-based initiatives
- Joint efforts between humanitarian and development actors to reduce or eliminate possible over-dependency by communities

3.4 Useful Resources for other ASEAN countries



- LIPI (Indonesian Institute of Sciences)
- PMI (Indonesian Red Cross)
 - Medical Team and supply, rapid assessment, community preparedness
- Non-Government Organization
 - MPBI (Indonesian Society for Disaster Management)
 - Global Rescue Network
 - IDEP Foundation
 - Lingkar Association
 - Muhammadiyah Disaster Management Center
 - Nahdlatul Ulama CBDRM
 - YAKKUM
 - KARINA (Caritas Indonesia):
 - KOGAMI (community preparedness and early warning at community level)
 - Mer-C (medical team)
 - 118 Ambulance
 - Yayasan Air Putih
 - Yayasan Tanggul Bencana Indonesia



Climate Change Adaptation in Disaster Management



4.1 Organizations concerned with Climate Change Adaptation

NATIONAL COUNCIL FOR CLIMATE CHANGE (DNPI)

Chairman	: President RI
Vice	: 1. Coordinating Minister for People Welfare, 2. Coordinating Minister for Finance
Secretary/Members	: Minister of Environment
Members	: 1. State Secretary Cabinet Secretary 2. Minister of Environment 3. Minister of Finance 4. Minister of Home Affairs 5. Minister of Foreign Affairs 6. Minister of Energy and Mineral Resources 7. Minister of Forestry 8. Minister of Agriculture 9. Minister of Industry 10. Minister of Public Works 11. Minister of National Planning/National Planning Board 12. Minister of Marine and Fisheries 13. Minister of Trade 14. Minister of Research and Technology 15. Minister of Transportation 16. Minister of Health 17. Head of Meteorological, Climatological and Geophysical Agency

4.2 Current Situation of CCA in Indonesia



- ICCOP Meeting in 2007 in Bali: Government launched the Indonesia Country Report: Climate Variability and Climate Change and their Implication, and the National Action Plan Addressing Climate Change (RAN-PI/NAPACC) on Nov 2007.
- National Development Planning Agency produced a draft document in December 2007 on National Development Planning Response to Climate Change: Long-Term and Medium-Term 2004 – 2009 National Development Planning Climate Change Mitigation and Adaptations Programs.
- Joint effort between Ministry of Environment and UNDP developed the Indonesia's Climate Change Adaptation Programme (ICCAP) which was drafted in December 2007.
- Indonesia has established National Council for Climate Change (DNPI) July 4, 2008

4.2 Challenges in Climate Change Adaptation



Challenges:

- Harmonization of CCA & DRR (State Ministry of the Environment & National Agency for Disaster Management)
- Limited number of research activities pertinent to climate change adaptation -> needs improvement of climate modeling which cost requirement
- Unimplemented of financial instruments mechanism related to adaptation:
 - Agriculture insurance
 - Climate risk insurance
 - Preventive infrastructure investment for densely populated areas



4.3 Efforts in Climate Change Adaptation

Indonesia's Climate Change Adaptation Programme (ICCAP)

Approach :

- Contribute to embedding climate risk and opportunity management into development planning within the framework of the MDG
- Ensure consideration of CC and opportunities in development decisions and investment to improve socio-economic resiliency of sectors and communities to CC and CV

ICCAP targeted the following output:

1. National Consortium and Research Grant Facility for Climate Risk and Opportunity Management (CROM)
2. Guidance for climate resilient spatial planning, settlement design and infrastructure systems in key sectors and priority geographic areas
3. Education, awareness and training programs to enhance CROM in seasonal/inter-annual and multi-decadal time scales
4. Community, private and government institutional capacities strengthened to undertake CROM
5. Policy, legal and regulation framework for CROM implementation in the seasonal/inter-annual and multi-decadal time scales
6. Climate and development information exchange systems established in a number of priority sectors and vulnerable regions

4.4 CCA Resources for Other ASEAN Countries



- State Ministry for Environment (KLH)
- Ministry of Marine and Fisheries
- Ministry of Health
- Ministry of Agriculture
- Ministry of Forestry
- Meteorology, Climatology and Geophysical Agency (BMKG)
- National Agency for Disaster Management (BNPB)
- Indonesian Red Cross (PMI)
- Universities (IPB, ITB, UGM etc.)



THANK YOU

ありがとう 非常に
(Arigato Gozaimasu)

TERIMA KASIH