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Asian Disaster Reduction Center (ADRC)

FINAL REPORT OF VISITING RESEARCHER PROGRAM

MUHAMMAD KHALIL BIN AB AZIZ

VISITING RESEARCHER

JAN. – JUNE 2009 TERM

MALAYSIA METEOROLOGICAL DEPARTMENT

Outline of Presentation

- Present Status of Disaster Management in Malaysia
- Knowledge and Experiences Gained During Visiting Researcher Program
- Discussion
- Conclusion
- Action Plan
- Suggestion to ADRC

Present Status of Disaster Management in Malaysia

Natural Disaster in Malaysia

- Wind Storms e.g. Thunderstorms, Squall lines, Tropical Storms and Typhoons
- Heavy Rain, Floods & Landslides
- Tsunamis
- Droughts
- Forest/Grassland Fires, Haze (local & trans boundary)

Recent major disasters for past few years

Year	Disaster	Killed	Injured	Total affected	Damage (USD)
2009(Jan)	Flood			8470	
2008	Flood			10210	
2008	Landslide	11	15	1422	
2007	Flood	33		158000	225m
2006	Flood	19		138000	343m
2005	Flood	17		100000	66m
2005	Mud flood	3		2793	

National Security Council (NSC)

- Established by Prime Minister Department based on the power of His Majesty the King in the Emergency (Essential Powers) Ordinance 1970

- Consists of
  - Deputy Prime Minister (chairman)
  - Minister of Information (vice-chairman)
  - Ministers
  - Head of government agencies
  - Experts

Role of National Security Council

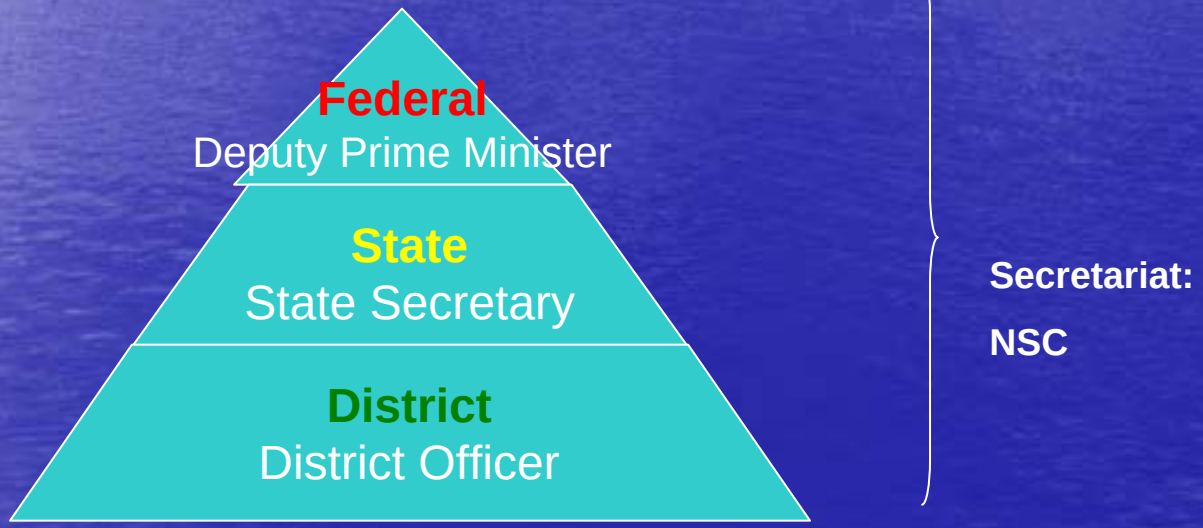
- Secretariat for the Disaster Management and Relief Committees according to the level of disaster occurred
- To ensure that the practise as well as implementation of the policy and mechanism in disaster management is carried out
- To ensure post-mortem is carried out after occurrence of disaster
- To activate Special Malaysia Disaster Assistance and Rescue Team (SMART) for search and rescue operations when necessary

Role of National Security Council

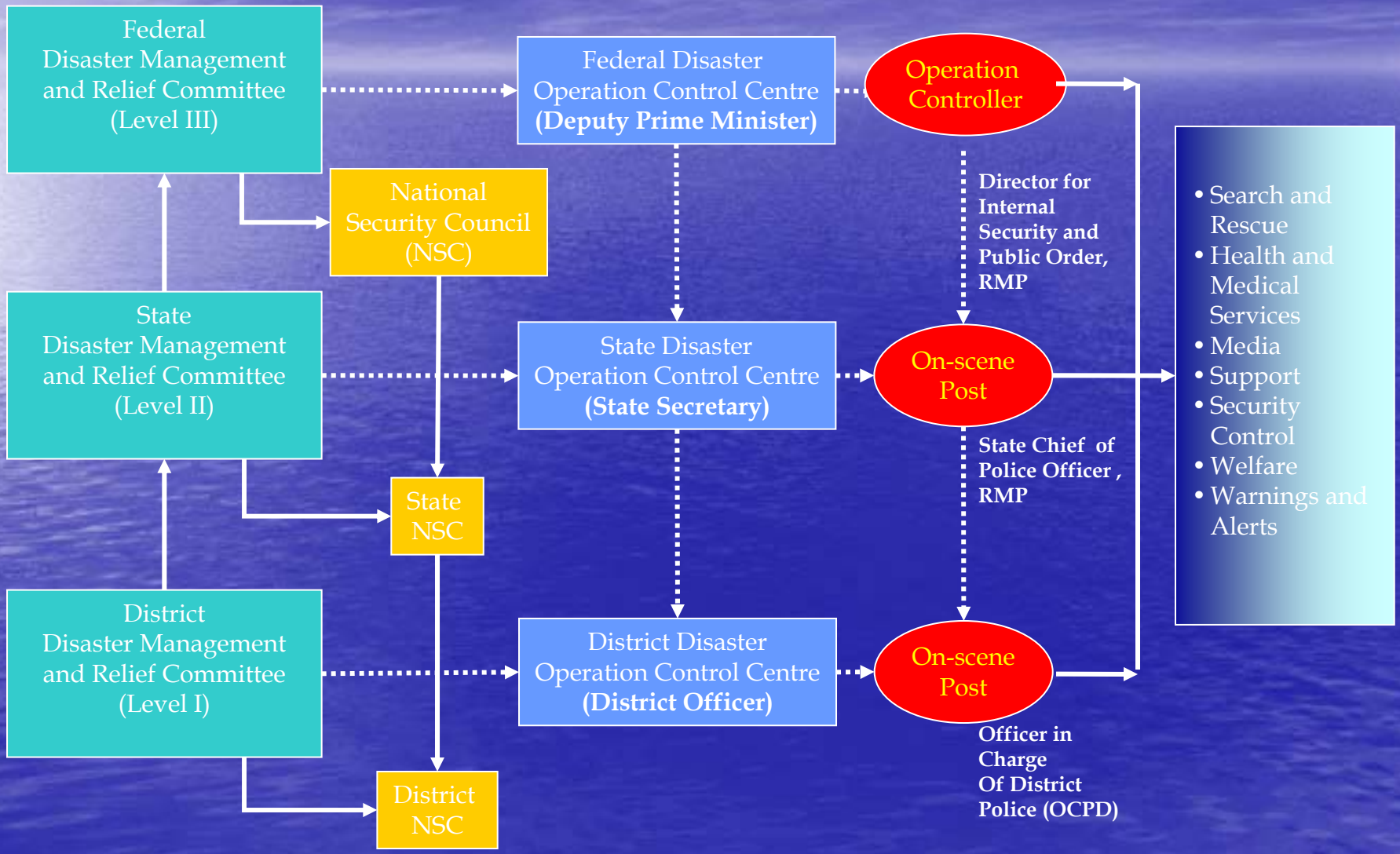
- To coordinate the handling of disaster management exercise as well as search and rescue from time to time
- To monitor the implementation of disaster preventive measures and control carried out by the relevant agencies
- To monitor the implementation of the educational, training and preventive strategies
- To give advice to Disaster Management and Relief Committee, when requested to ensure the smooth handling and management of a disaster

Disaster Management and Relief Committee

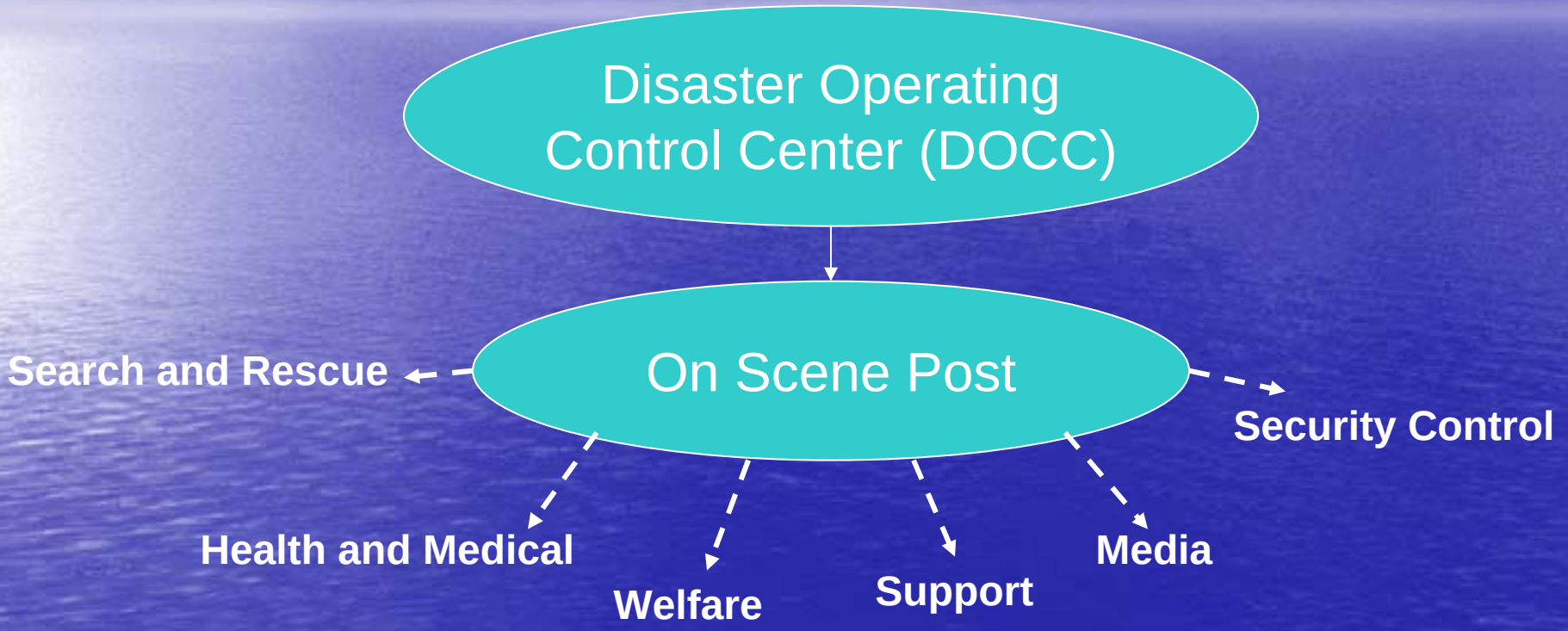
- **Policy and Strategic Planning**
  - **The District Disaster Management and Relief Committee (Level I)**
  - **The State Disaster Management and Relief Committee (Level II)**
  - **The Federal Disaster Management and Relief Committee (level III)**



Structure of Organization



Sub System of each level



Operational Approach

- Bottom Up Approach
- If the District has shortage of Manpower, Fund or Equipments, the state level or federal level will assist and coordinate

Legal Provisions In Disaster Management

- Directive
  - Directive No. 20 NSC - Policy And Mechanism Of National Disaster Management And Relief
- Acts
  - Police Act 1967
  - Land Conservation Act 1960
- Standard Operating Procedures (S.O.P.)
  - S.O.P. for earthquake and tsunami disasters (after 26 December 2004)
- Guidelines
  - Permissible density and cutting slope for development - DOE

Public Awareness Program

- Publication of Public Awareness Guideline on Disaster
- 26 December is declared as National Disaster Awareness Day;
- Publication of Safer School Manual by Ministry of Education;
- Publication of Safety Manual of Crisis and Disaster by NSC.

Disaster Awareness Day 2006

- 2-Day Seminar on ***"Mainstreaming Disaster Risk Reduction Into Development Policy, Planning and Implementation"***;
- Launching of ***Safety Manual of Disaster and Crisis***;
- Launching of **Disaster Day's Song**, "Dunia Semakin Usang";
- Received contribution from other country, private sectors and NGO for **National Disaster Relief Trust Fund**;
- 26 December 2006, Kuala Lumpur.

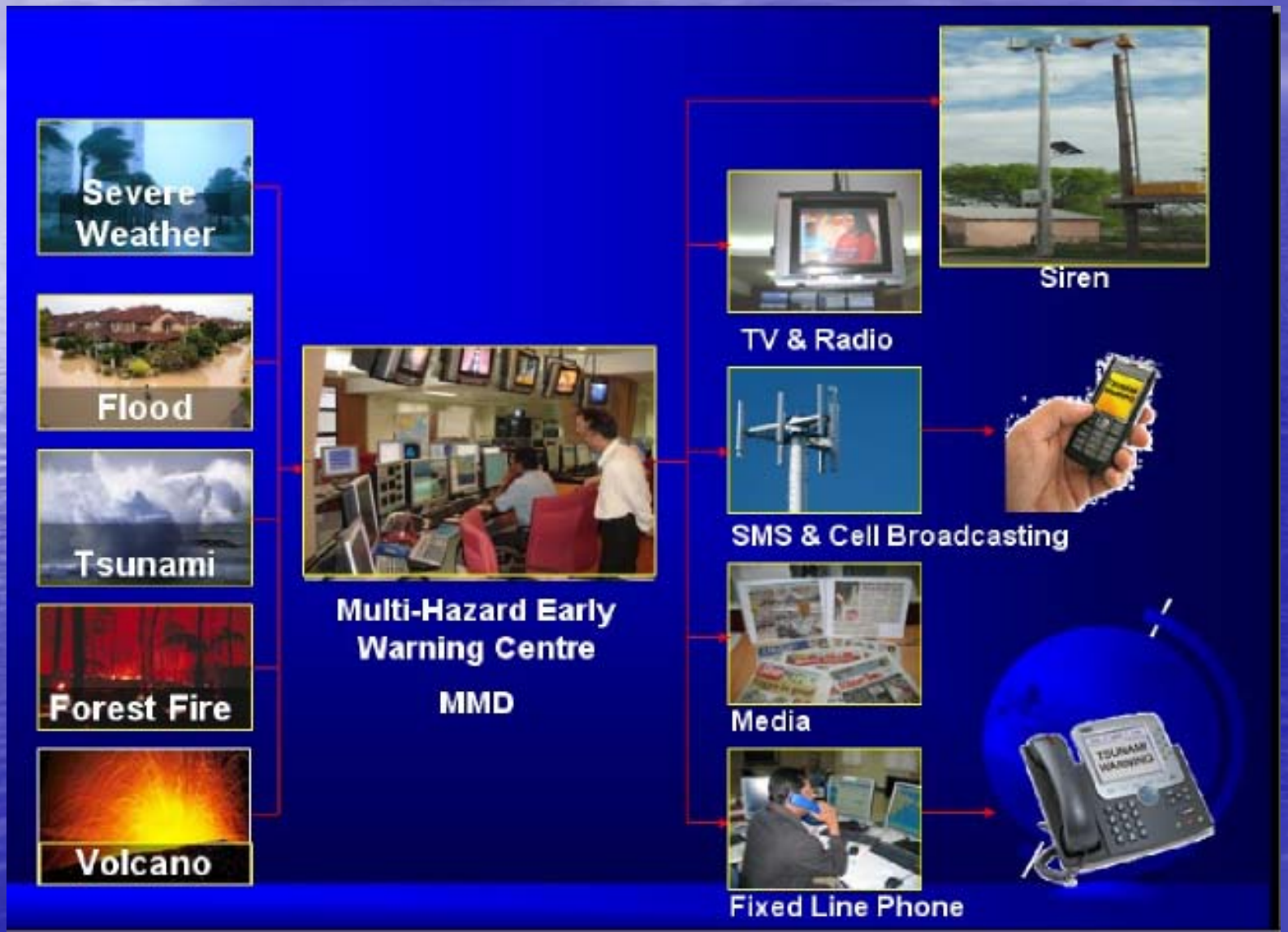
Disaster Prevention and Preparedness

- Early Warning System
- Structural- Flood Mitigation Structure i.e. The Stormwater Management and Road Tunnel (SMART)
- National Disaster Relief Trust Fund (NDRTF)
- Policy, Guidelines and Standard Operating Procedures (S.O.P)
- Establishment of Central Store for Evacuation Center
- Capacity Building
- Bilateral, Regional and International Cooperation

Early Warning System

- **Malaysian Meteorological Department (MMD)**
  - Weather Forecasting and Warning
  - Tsunami Early Warning System
  - Multi-Hazard Early Warning System
- **Malaysian Department of Irrigation and Drainage (DID)**
  - Telemetry System - Flood Forecasting Models and Infobanjir
- **Malaysian Centre for Remote Sensing (MACRES)**
  - National Disaster Data and Information Management System (NADDI)
- **Department of Environment (DOE)**
  - Air Pollutant Index (API) - Haze

Multi-Hazard Early Warning System



The Stormwater Management and Road Tunnel (SMART)

- Jointly project between Department of Drainage and Irrigation and the Highway Authority of Malaysia
- Inner diameter 11.8m, distance 9.7km
- diverting the water into the river downstream
- Dual function i.e. for motorway during normal days and water drainage during heavy rain/flood.

National Disaster Relief Trust Fund (NDRTF)

- Annual allocation from the Government
- Public Contribution
- Government sector & private company contribution
- Operating Expenditure from various agencies for recovery and reconstruction
- To address the immediate needs of the affected communities
- Monitoring and distribution by NSC

Bilateral, Regional and International Cooperation

Regional Cooperation

- ASEAN Committee on Disaster Management (ACDM) (Regional Cooperation and Assistance)
- ASEAN Regional Forum (ARF) (Confidence Building)
- Asian Disaster Reduction Centre (ADRC) (Information Sharing)
- Asian Disaster Preparedness Centre (ADPC) (Educational and Training Cooperation)

Bilateral, Regional and International Cooperation

International Cooperation

- Federal Emergency Management Agency (FEMA), USA – (International Networking)
- United Nations – International Search and Rescue Advisory Groups (UN – INSARAG) (Humanitarian Assistance Networking)
- Typhoon Committee (Mitigation, Coordination and Early Warning Cooperation)
- Participating in UN-ISDR (United Nations – International strategy for Disaster Reduction).
- Malaysian Meteorological Department (MMD) – World Meteorological Organization (WMO)

Response and Relief

- Search and Rescue - Special Malaysia Disaster Assistance and Rescue Team (SMART Team)
- Health and Medical – i.e. Emergency Medical Services
- Welfare/ Evacuation Centre – i.e. Welfare Dept.
- Support – i.e. District Office, Municipal/Town Council, Malaysian Telecommunication Ltd.
- Media – i.e. Information Dept. and Broadcasting Dept.
- Security Control – Royal Malaysian Police

Role of Non Government Organization (NGOs)

To provide assistance in disaster mitigation, response, recovery, rehabilitation and construction;

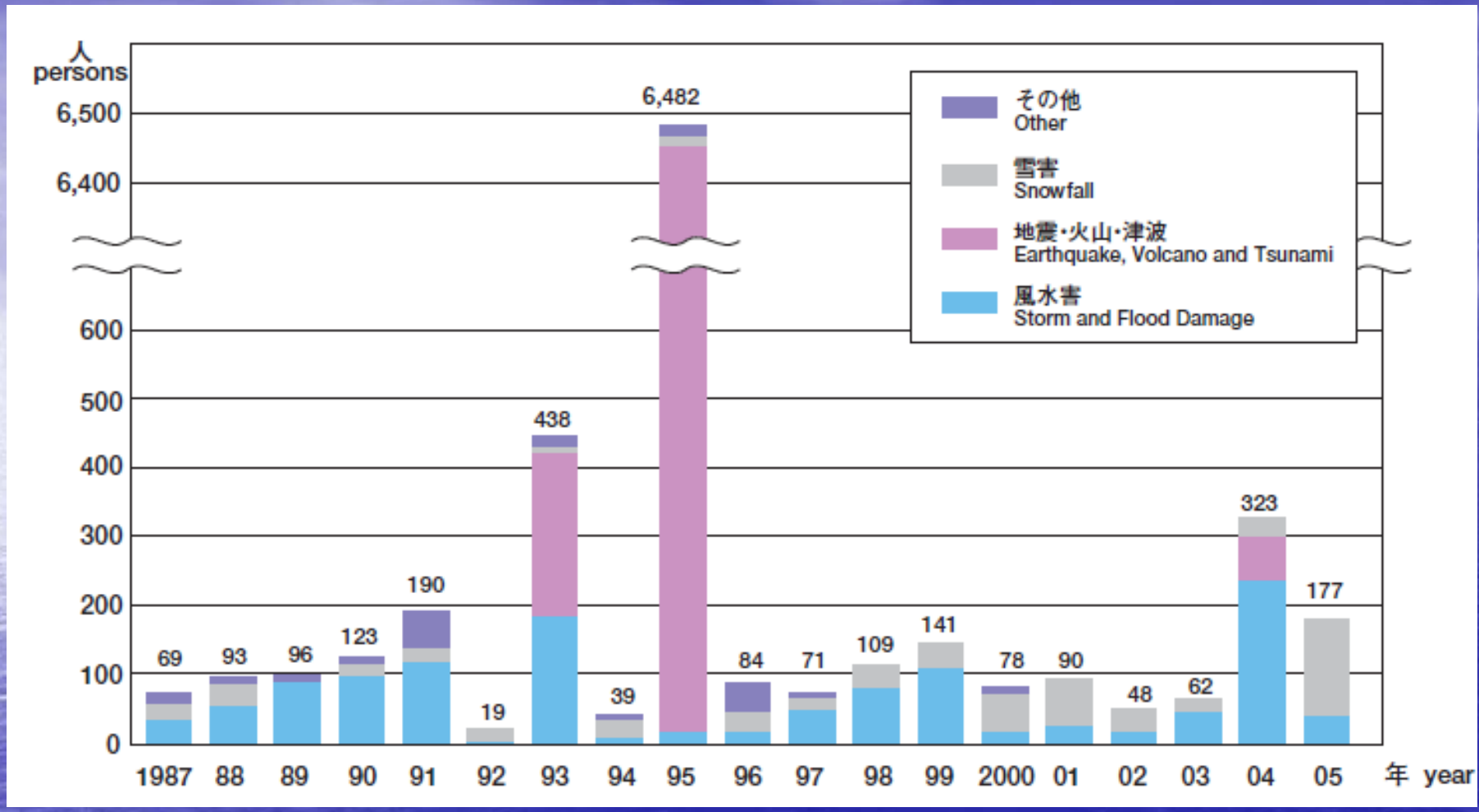
- Malaysian Red Crescent Society (MRCS) – medical assistance and rehabilitation
- MERCY MALAYSIA – medical assistance and rehabilitation
- Haluan Malaysia – rehabilitation and reconstruction
- Global Peace Malaysia – medical assistance and rehabilitation
- AMAN Malaysia – rehabilitation and reconstruction
- St. John Ambulance – medical assistance

Knowledge And Experiences Gained Through The Visiting Researcher Program

- Natural Disasters in Japan
- Central Disaster Management Council
- Acts Regarding Disasters
- Disaster Countermeasures
- Disaster Memorial
- Disaster Countermeasures of Private Companies

Natural Disaster in Japan

- Earthquake, Volcano, Tsunamis
- Typhoons, Torrential Rains and Heavy Snow



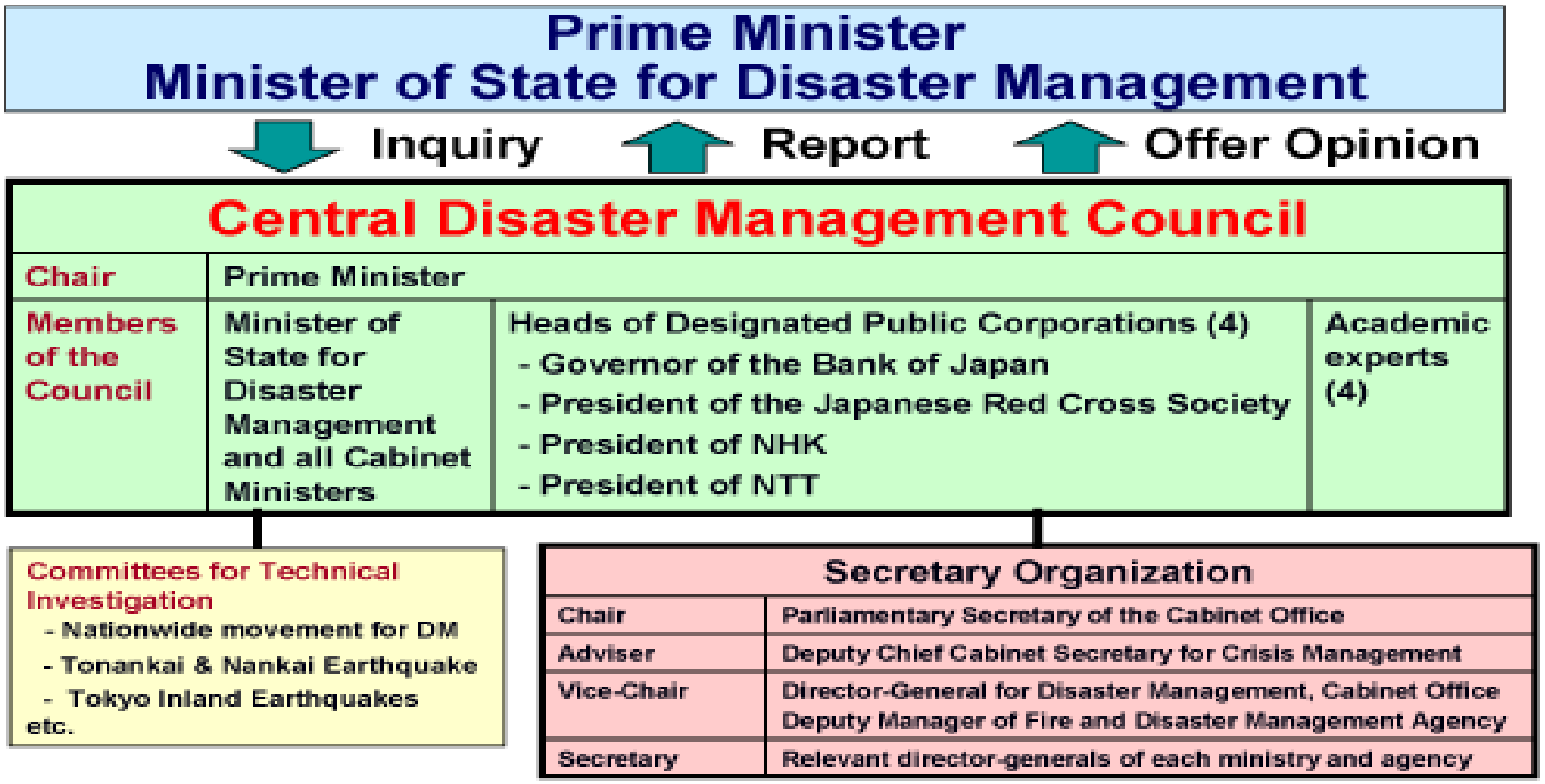
Numbers of deaths and missing person by type of disaster

Source: Prepared by the Cabinet Office based on data from Fire and Disaster Management Agency

Central Disaster Management Council

- Established by Cabinet Office based on Disaster Countermeasures Basic Act.
- Consists of
  - Prime Minister (chairman)
  - Minister of State for Disaster Management
  - Ministers
  - Head of major public institutions
  - Experts

Organization of Central Disaster Management Council



Role of Central Disaster Management Council

- To integrate and coordinate disaster reduction policies and measures of ministries and agencies
- Responsible for securing cooperation and collaboration among related government agencies
- To undertake the planning of basic disaster management policies and response to large-scale disasters
- To conduct coordination during disaster events

Disaster Management Related Budget

- Approximately 5% of total amount of general budget
  - Scientific Technology Research 1.3%
  - Disaster Prevention and Preparedness 23.6%
  - National Land Conservation 48.7%
  - Disaster Recovery and Rehabilitation 26.4%

Disaster Management Committee

- City/community level
  - **First response to disasters**
    - **Set up disaster management HQ**
    - **Evacuate residents**
    - **Dispatch fire fighters and rescue teams**
- Prefectural level
  - **Supporting city level activities**
  - **Coordination between city level and national level activities**
- National level
  - **Supporting city/prefectural level responses**
  - **Dispatch of ERT in a large-scale disaster**

Acts / Legal Provision Regarding Disasters

Classified into 4 categories:

- Basic Acts: (7 acts)
  - Disaster Countermeasures Basic Act (1961)
- Disaster Prevention and Preparedness Acts: (18 acts)
  - Erosion Control Act (1897)
- Disaster Emergency Response Acts: (3 acts)
  - Disaster Relief Act (1947)
- Disaster Recovery and Reconstruction, and Financial Measures Acts: (23 acts)
  - Agriculture Disaster Compensation Act (1947)

Disaster Countermeasures

- Research and Development
- Earthquake Disaster Countermeasures
- Storm and Flood countermeasures
- Disaster Prevention and Preparedness
- Information Sharing/Cooperation

1. Research and Development

1.1 Scientific Technology Research in Disaster Reduction

- According to “Basic Science and Technology Plan — Third Term” (2006), which describes Japan’s basic scientific technology policies, to sets a major goal of making Japan a country that can take pride in being the safest in the world, and an intermediate goal of ensuring the security of national land, society and people’s livelihoods.

1.2 Utilization of Earthquake Early Warning Information

- Estimated arrival time of the S-wave of the earthquake and seismic intensity in each area
- Possible to detect the P-wave (destructive wave) near the epicenter and immediately processing the data since there is a difference in the speed of several seconds to several tens of seconds
- This critical time to be used for mitigating damage by stopping trains and elevators, extinguishing flames or crawling under tables.

1. Research and Development

1.3 The Research Center for Earthquake Prediction (RCEP) of Kyoto University that focused on

- **Prediction of the earthquakes at plate boundaries, such as the future Nankai earthquake,**
- **Studies of onshore earthquakes in southwest Japan,**
- **Efforts to provide earthquake information to other disciplines and the public as well as education of students.**

2. Earthquake Disaster Countermeasures

2.1 Observation System

- JMA and other organizations install and maintain seismometers that are used for estimating the location of the epicenter and magnitude of an earthquake as well as for tsunami forecasts, and seismic intensity meters that measure the intensity of ground motion, in numerous places nationwide.
- As soon as an earthquake occurs, JMA analyzes the data from various seismometers and seismic intensity meters.
- Within two minutes, JMA will issues a seismic intensity information report for earthquakes of intensity 3 or greater
- Within five minutes JMA will issues an earthquake information report indicating the epicenter and magnitude of the earthquake and the seismic intensity in the municipalities where strong shaking was observed.

2. Earthquake Disaster Countermeasures

2.2 Earthquake-proofing of Houses and Buildings

- Central Disaster Management Council drafted the “Urgent Countermeasures Guideline for Promoting the Earthquake-proofing of Houses and Buildings” in 2005, to stipulates that earthquake-proofing.
- Urgently and strongly enforced in close cooperation with related ministries as a national priority.
- Act on Promotion of the Earthquake-proof Retrofit of Buildings was amended to strengthen measures such as the development of a promotion plan for improving earthquake-proofing by local governments.

2. Earthquake Disaster Countermeasures

2.3 Tsunami Countermeasures

- Announcement/transmitting of tsunami forecasts, improving coastal embankments (tidal embankments) and tide prevention gates,
- Tsunami hazard map and the designation/development of tsunami evacuation buildings by local governments

3. Storm and Flood countermeasures

3.1 Observation System

- JMA observes meteorological condition using the Automated Meteorological Data Acquisition System (AMeDAS), radars and satellites, and issuing forecasts or warnings to prepare against disasters.
- The rainfall and water level in the rivers are observed by the Ministry of Land, Infrastructure and Transport and prefectural governments utilizing visual observation methods, mechanical observation equipment, and a wireless telemeter system that transmits automatically observed data from remote locations.
- Flood forecasts and water level information are disseminates to the Internet and mobile phones.

3. Storm and Flood countermeasures

- **3.2 Comprehensive Storm and Flood Countermeasures**.
  - Improving rivers and sewage systems
  - Improving non-structural measures such as preparing hazard maps, providing disaster information.
  - Developing of the warning and evacuation systems of the possible inundation areas and landslide prone areas according to Flood Control Act.

4. Disaster Prevention and Preparedness

4.1 National Land Conservation

- Carried out river improvement, soil erosion control (sabo), and soil and coastline conservation for protecting national land, citizens' lives and property from disasters.
- "Selective Infrastructure Improvement Plan" was set forth in 2002 to promote prioritized, effective and efficient infrastructure improvement projects.
- "Forest Improvement and Conservation Works Master Plan" was formulated in 2003 to promote comprehensive and effective forestry improvement and soil conservation projects.

4. Disaster Prevention and Preparedness

4.2 Observing, Forecasting and Warning of Disaster Risks

- JMA issues a wide range of forecasts, warnings and advisories regarding earthquake generated tsunamis and severe weather events such as heavy rain.
- 24-hour systems to carefully monitor various natural phenomena and weather conditions

4. Disaster Prevention and Preparedness

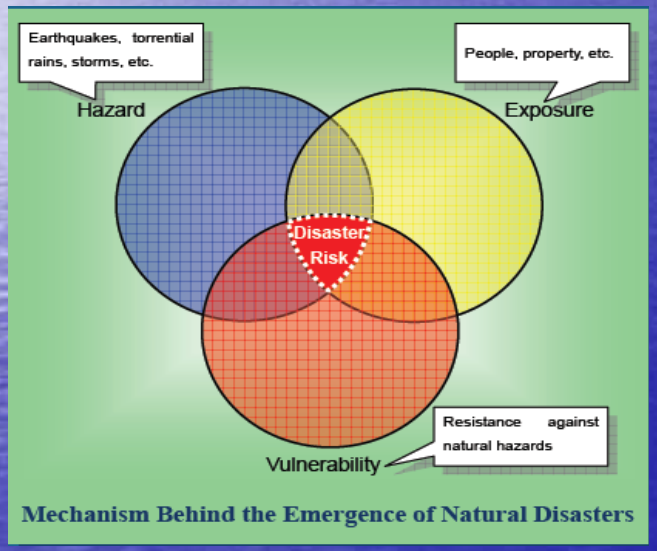
4.3 Disaster Reduction Drills and Exercises

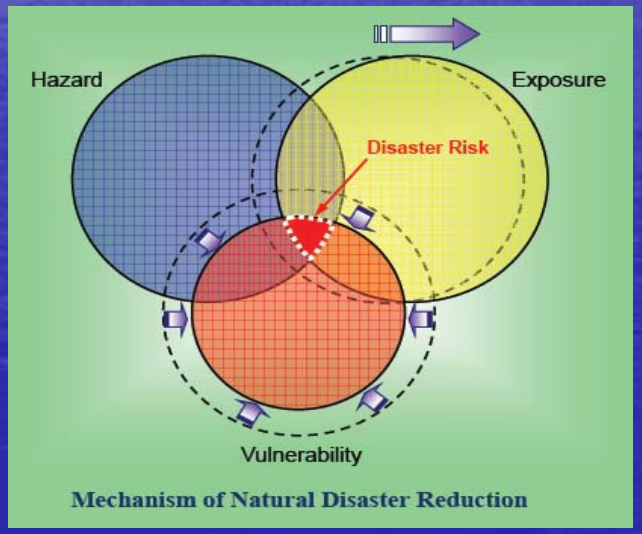
- To review the effectiveness of the disaster management system in view of quick and appropriate emergency operations
- To enhance public awareness through wide participation.
- September 1st, Disaster Reduction Day, wide-area, large-scale disaster reduction drills are conducted nationwide in collaboration with disaster related organizations.

4. Disaster Prevention and Preparedness

4.4 Total Disaster Risks Management (TDRM)

Disaster Risk = function (Hazard, Exposure, Vulnerability)



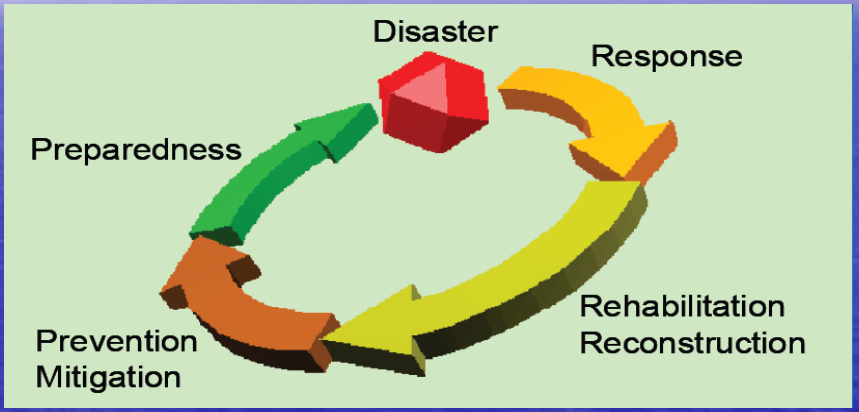


To reduce disaster risk, it is important to reduce the level of vulnerability and to keep exposure as far away from hazards as possible by relocating populations and property.

Disaster Prevention and Preparedness

4.4 Total Disaster Risks Management (TDRM)

Disaster Risk Management Cycle



Pre-disaster stage

- **Prevention / Mitigation**
  - Action of prevent or mitigate damage (*e.g.* construction of dikes and dams against floods)

Preparedness

- Emergency drills
- Public awareness

Post-disaster stage

- **Response**
  - Search & rescue operation, first aid, fire fighting and evacuation.
- **Rehabilitation / Reconstruction**
  - Transportation recovery
  - Reconstruction of building
  - Lifeline recovery

4. Disaster Prevention and Preparedness

4.5 Community Based Disaster Management (CBDM)

- Promotes a bottom-up approach working in harmony with the top - down approach, to address the challenges and difficulties.
- Supporting local communities to analyzing their hazardous conditions, vulnerabilities and capacities from their viewpoint.
- In case of disasters, the people at the community level most affected because they are the ones directly hit by disasters, whether major or minor.
- Through the CBDM, the people's capacity to respond to emergencies is increased by providing them with more access and control over resources and basic social services.

4. Disaster Prevention and Preparedness

4.6 Town-watching and Hazard Map Workshop

- To raise community awareness of natural disasters
- Activities during the workshop
  - Lectures about natural disaster, disaster risk management and methodology of hazard mapping
  - Divided into groups and observing the study area (disaster-prone area)
  - Identify the problems and advantages of the area
  - Discussing and developing group hazard map
  - Presenting their finding
  - Q&A among groups
- After the workshop, participants learnt about the vulnerability, risk and capacity of the area

4. Disaster Prevention and Preparedness

4.7 Disaster Awareness Program

- Nationwide Movement for Disaster Reduction
  - Publication of “Basic Framework for Promoting a Nationwide Movement for Disaster Reduction – Actions with Added Value to Security and Safety”
- Disaster Awareness Campaign:
  - 1st Sep **- Disaster Reduction Day**
  - 30th Aug to 5th Sep **- Disaster Reduction Week**
  - 17th Jan **- Disaster Reduction & Volunteer Day**
  - 15th to 21st Jan **- Disaster Reduction & Volunteer Week**
  - Training to volunteer, local organization and residents such as: fighting fires, fighting floods, search and rescue, first aid, and evacuation.
- Disaster Education in School
  - Learning about disaster during childhood
  - Promoted disaster education by Cabinet Office.

Information Sharing/Cooperation

- UN World Conference on Disaster Reduction
- International Strategy for Disaster Reduction
- Initiative for Disaster Reduction through ODA
- International Emergency Assistance
- Regional Cooperation through Asian Disaster Reduction Center (ADRC)
- Indian Ocean Tsunami Warning and Mitigation System (IOTWS)
- International Recovery Platform (IRP)
- GLobal IDEntifier Number (GLIDE)
- Disaster Reduction Hyperbase-Asian Application (DRH-Asia)

Disaster Memorial

Aims:

- To hand down lesson learned of natural disasters to future generations.
- To educate people about disaster prevention and preparedness.
- To commemorate the tragic event of disasters.

Disaster Memorial

1. Great Hanshin-Awaji Earthquake Memorial

- Located in Kobe HAT, next to ADRC
- Information of Great Hanshin-Awaji Earthquake such as publications, photos and videos
- Demonstration about earthquake motion and retro-fitting building by volunteer

Disaster Memorial

2. Nojima Fault Preservation Museum

- Fault of Great Hanshin-Awaji Earthquake passes through Hokkudan town
- Preserved badly damaged house by the fault
- Survivors' experiences about earthquake
- Earthquake simulator

Disaster Memorial

3. Mt. Unzen Disaster Memorial Hall

- Commemorates Mt. Unzen volcano eruption a decades ago, caused substantial damage and casualties by the pyroclastic flows and mudslides that devastated the area.
- Exhibition about volcanic activity and impact of volcano eruption.
- Ono Koba Primary School, damaged in the large pyroclastic flows of 1991 and preserved as a site for studying the destruction.
- Research Center for study volcanic activity of Mt. Unzen

Disaster Countermeasures of Private Companies

1. NTT West Corporation

- Subsidiary of Nippon Telegraph and Telephone (NTT)
- Provides telecommunication services to West Japan.

– Securing critical communications

- Introducing emergency number services such as 110, 119, and 118 to prevent call congestion during disaster
- Provide Disaster Emergency Message Dial (171) and other services as a means of checking on the safety of relatives and friends in affected areas,
- Make their public telephones available free of charge, and provide specially installed public telephones at evacuation sites and other locations in affected areas for use by residents

Disaster Countermeasures of Private Companies

NTT West Corporation

- Improve communications network reliability
  - implementing transmission line multi-routing
  - design communications equipment, buildings, steel towers, and other facilities to withstand disasters in accordance with predetermined standards.
- Prompt restoration of communications services
  - Provide mobile disaster response equipment such as power supply vehicles, portable satellite equipment, and portable mobile base stations
  - For major disaster events, a disaster management headquarters and other emergency structures are also immediately set up and work to promptly restore communications services.

Disaster Countermeasures of Private Companies

2. Kansai Electric Power

- Established “Disaster Prevention Work Plan”
- Revising company rules in preparation of disasters
- The Emergency Disaster Team takes control in the event of a disaster and works to restore power in coordination with the administration, police, fire department, etc.
- Established a plan for quick restoration of power supply
- Promoting special countermeasures to deal with Tokai earthquakes in compliance with the “Large Scale Earthquake Countermeasures Special Measures Law”

Disaster Countermeasures of Private Companies

3. Osaka Gas

- Preparedness for Large Earthquakes
  - Substituting conventional gas pipes to polyethylene (PE) pipes that are highly resistant to earthquake damage
  - Installing intelligent meters that automatically shut off gas supplies when seismic tremors are detected
  - Developing an emergency communications network,
- Established 24hours emergency response service
- Conducted Disaster Prevention Drills to improve preparedness and maintain safety awareness.

Discussion

- After big disaster events
  - Great Hanshin-Awaji Earthquake 1995
    - Various acts regarding earthquake
    - Disaster Reduction and Volunteer Day/Week
  - Indian Ocean Tsunami 2004
    - National Early Warning Tsunami
    - Awareness Program
    - Multi-hazard Early Warning System
- Annual allocation budget from government
- Malaysia approaches is multi-purpose, e.g. Multi-Hazard Early Warning System and SMART Tunnel
- Malaysia need more specific and comprehensive legal provision in disaster management
- Both countries have similar concept of disaster management but different in size and approaches due to type, severities and frequencies of disasters, populations, financial strength, civilization and also past experiences of disaster.

Conclusion

- Due to climate change and worse disaster trends (in term of severity and frequency) nowadays, we should aware and be prepared of upcoming disasters.
- Good knowledge about disasters among citizen greatly reduce the impact of disasters.
- Good collaboration with international organization such as ADRC, WMO, JICA, UN, etc of sharing information and technologies.
- Good cooperation between local agencies to promote better ways in dealing with disasters.

ACTION PLAN UPON RETURN TO MALAYSIA

- Deliver a talk during in house technical seminar to my colleagues to present what I have learned during this course.
- Enrich Malaysian Meteorological Department awareness day by introducing Volunteer Day/Week Concept, Community Based Disaster Management, Town-watching and Hazard Map Programme.
- Set up criteria for reporting occurrence of disaster and participate actively of reporting in GLIDE Number.
- Propose to my department to draft Meteorological Act.
- Distribute the materials provided during this course to the relevant division.
- Initiate affords to work with NGOs in building up awareness regarding disasters amongst the public.

Suggestion to VR Program

- Reduce the period and increase the participants
- Categorize/simplify multi-language disaster dictionary
- Select participant from similar nature of job
- Take extra effort to collect membership fees

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Thank you for your kind attention

TERIMA KASIH

ありがとう