Scope of Presentation

I. GENERAL INFORMATION
   • Profile of Philippines
   • Profile of Japan

II. PHILIPPINE DISASTER MANAGEMENT SYSTEM
    • Legal Basis
    • Organization
    • DRM Act of 2010

III. JAPAN DISASTER MANAGEMENT SYSTEM
    • Legal Basis
    • Organization
    • Disaster Counter Measures Act

IV. FLOOD SITUATION IN CENTRAL LUZON
    • Profile of Central Luzon
    • Causes of Flood in Central Luzon

V. RESEARCH STUDY IN JAPAN
    • Field Visits
    • Orientation/Training/Seminars
    • International Meeting/Symposium/Workshop
    • Visit to Museum/Institutions of Learning
    • Others

VI. ACTION PLAN
General Information

- Total area: 300,000 sqm
- Coast line: 36,289 (5th longest)
- Estimated Population: 94.01m
- Three major island groups:
  - Luzon - largest island group with 141,000 sq. kms.
  - Mindanao - second with 102,000 sq. kms.
  - Visayas - third with 57,000 sq. kms.
- 17 Regions
- 80 Provinces
- 1,613 City/Municipality
- 42,025 Barangays

Climate

- Tropical marine climate (hot and humid)
- Dominated by two major seasons: wet and dry seasons
- “Habagat” (Southwest monsoon) May to October
- “Amihan (Northeast monsoon) November - April
- Mean annual temperature is 26.6°C (79.88)
- 28.3°C during summer months
  o “Tag - init” summer (Hot and dry season) March to May
  o “Tag-ulan” (rainy season) June to November
  o “Tag-lamig” (cool dry season) December - February
Natural Hazards in the Philippines

Typhoon Vulnerability

Distribution of Active Faults and Trenches in the Philippines

Philippine Faults and Trenches

Seismicity of the Philippines
Natural Hazards in the Philippines

Tsunami Vulnerability

LENGEND:
- HIGH DANGER ZONE: These areas are susceptible to high wave involving areas of high-1.2m or with an intensity of PES-VIII.
- LOW DANGER ZONE: These are susceptible areas with medium waves involving areas of high-1.2m or with an intensity of PES-IV.
- MILD DANGER ZONE: These are susceptible areas with low waves involving areas of high-1.2m or with an intensity of PES-I.
- NO PRESENT RISK: These are areas with no present risk.

Landslide Vulnerability

EFFECTS OF NATURAL HAZARDS

Mt. Mayon

Guinsaugon, Southern Leyte Landslide

Typhoon

2004 - Tsunami

MT. Pinatubo 1991

Mt. Pinatubo 1991

TY “Kiko” – August 6, 2009 –
Bohol, Eastern Visayas
Tropical Storm "Ondoy"

TY "Pepeng"
General Profile: Japan

- Land Area: 378,000 sqkm
- Population: 127.77 million
- Regions: 4
- Prefectures: 47
- Municipalities: 1,800
- Capital: Tokyo
- Climate: 4 seasons
  (Winter, Spring, Autumn, and Summer)
Every year there is a great loss of peoples lives and property in Japan due to natural disasters, up until the 1950's numerous large-scale typhoons and earthquakes caused extensive damage and thousands of casualties. However the development of disaster management system, promotion of national land conservation, improving weather forecasting and technologies, and upgrading disaster communications systems damages have been decreased except for the 1995 Great Hanshin-Awaji earthquake where 6,400 people perished and in 2004 10 typhoons crossed over Japan. There is also a possibility that another large scale earthquake might happen again which post a threat to the safety and security of the country.

Recent Flood in Hyogo
Damage to Maruyama River area caused by

- Dead 5
- Injured 51
- Affected buildings 4033
- Inundated buildings 7944

Maruyama Riv.
Recent Flood in Hyogo
Damage to Maruyama River area caused by typhoon in 2004

"PHILIPPINE DISASTER RISK REDUCTION MANAGEMENT SYSTEM"
LEGAL AUTHORITY

RA 10121
Philippine Disaster Risk Reduction and Management (PDRRM) Act of 2010
Signed on May 27, 2010
by Her Excellency President Gloria Macapagal - Arroyo

“AN ACT STRENGTHENING THE PHILIPPINE DISASTER RISK REDUCTION AND MANAGEMENT SYSTEM, PROVIDING FOR THE NATIONAL DISASTER RISK REDUCTION AND MANAGEMENT FRAMEWORK AND INSTITUTIONALIZING THE NATIONAL DISASTER RISK REDUCTION AND MANAGEMENT PLAN, APPROPRIATING FUNDS THEREFOR AND FOR OTHER PURPOSES”
Republic Act No. 10121

Salient Features

- Policy Statements and Terminologies on DRRM (Secs. 2 & 3)

- Institutional Mechanisms (Secs. 5 – 12)
  - DRRMCs (National, Regional, Provincial, City, Municipal and Barangay Levels)
  - Office of Civil Defense
  - Permanent Office on DRRM at the LGU Level

- Operational Mechanisms (Secs. 15 – 18)
  - Coordination during Emergencies
  - Declaration of a State of Calamity
  - Remedial Measures
  - Mechanism for the IHAN
Republic Act No. 10121

Salient Features

- Participation, Accreditation, Mobilization, Protection and Development of Disaster Volunteers
- Training and Education in DRR
- Funding
- Prohibited Acts
- Penal Provisions

RA No. 10121 - Salient Features

I. Policy Statements on DRRM (Sec. 2)

- Upholding people’s rights to life and property and adherence to internationally accepted principles, norms and standards for capacity building in DRRM and humanitarian assistance (Sub-Sections a – c)

- Adoption of a holistic, comprehensive, integrated, proactive and multi-sector approach in addressing the impacts of disasters, including climate change (Sub-Section d)

- Development, promotion and implementation of a comprehensive National Disaster Risk Reduction and Management Plan (NDRRMP) (Sub-Section e)

- Mainstreaming DRR and Climate Change in national and local development plans and development processes (e.g. policy formulation, socio-economic development planning, budgeting and governance) (Sub-Sections f, g and h)
RA No. 10121 - Salient Features

I. Policy Statements on DRRM (Sec. 2) – con’t.

- Mainstreaming DRR into the peace process and conflict resolution (Sub-Section i)
- Ensuring DRR and CC-Gender responsive measures, sensitive to indigenous knowledge and respect to human rights (Sub-Section j)
- Strengthening capacity building of –
  - LGUs on DRR (e.g. decentralized powers, responsibilities and resources) (Sub-Sections k and l)
  - Vulnerable and marginalized groups (Sub-Section n)
- Engaging the participation of CSOs, private sector and volunteers in DRR (Sub-Section m)
- Promotion of breastfeeding before and during a disaster or emergency (Sub-Section o)
- Ensuring maximum care, assistance and services to affected individuals and families (Sub-Section p)

II. Scope (Sec. 4)

- Provision for the development of policies and plans and implementation of actions and measures pertaining to all aspects of DRRM, including:
  - Governance
  - Risk assessment and early warning
  - Knowledge building and awareness raising
  - Reducing underlying risk factors
  - Preparedness for effective response and early recovery
III. Institutional Mechanisms (Secs. 6 – 13)

- There are four (4) major institutional mechanisms for DRRM provided for under the new law:
  1. DRRMC Networks from the national, regional, provincial, city and municipal level, and BDRRM Committees at the barangay level;
  2. Local Disaster Risk Reduction and Management Offices;
  3. Office of Civil Defense, and
  4. Disaster Volunteers

Section 6. Powers and Functions of the NDRRMC

- NDRRMC empowered with policy-making, coordination, integration, supervision, monitoring and evaluation functions to be carried out through seventeen (17) tasks / responsibilities
Organization of Various Disaster Reduction & Risk Management Councils

**NDRRMC**
- **Chairperson**: Secretary, National Defense
- **Vice-chairpersons**:
  - Disaster Preparedness-Secretary, DILG
  - Disaster Response-Secretary, DSWD
  - Disaster Prevention & Mitigation-Secretary, DOST
  - Disaster Rehabilitation & Recovery-DG, NEDA

**RDRRMC**
- **Chairperson**: Regional Director, OCD
- **Vice-chairpersons**:
  - Regional Directors, DSWD, DILG, DOST, NEDA
  - Heads of Regional Offices and Field Stations

**P/C/M DRRMCs**
- **Chairperson**: Provincial Governor / City Mayor / Municipal Mayor / Barangay Chairman

**Climate Change Commission**

**Regional Development Council**

**Peace and Order Council**

**Selected CSOs and Private Sector**

**Regional**
- DA
- DepEd
- DILG
- DOTC
- DPWH
- DBM
- DFA
- OPS
- PIA
- AFP
- LPP
- LMP
- CSOs
- DOH
- DENR
- DOT
- CHED
- DOE
- PNP
- DOST

**National**
- NAPC
- OPAPP
- Private Sector
- NCFRW

**Regional Development Council**

**Peace and Order Council**

**Selected CSOs and Private Sector**

**Regional**
- DA
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- AFP
- LPP
- LMP
- CSOs
- DOH
- DENR
- DOT
- CHED
- DOE
- PNP
- DOST

**National**
- NAPC
- OPAPP
- Private Sector
- NCFRW
MEMBERS OF THE NDRRMC

- Secretary, DOH
- Secretary, DENR
- Secretary, DA
- Secretary, DepEd
- Secretary, DOE
- Secretary, DOF
- Secretary, DTI
- Secretary, DOTC
- Secretary, DBM
- Secretary, DPWH
- Secretary, DFA
- Secretary, DOJ
- Secretary, DOLE
- Secretary, DOT
- The Exec. Secretary, OP
- Secretary, OPAPP
- Chairman, CHED
- Chief of Staff, AFP

- Chief, PNP
- The Press Secretary
- Sec-Gen., Phil. Red Cross (PRC)
- Commissioner, NAPC
- Chairperson, NCRFW
- Chairperson, HUDCC
- Exec. Director, CC Office of the CCC
- President, GSIS
- President, PhilHealth
- President, ULAP
- President, LPP
- President, LCP
- President, LMP
- President, LMB
- Four (4) reps from the CSOs
- One (1) rep from the Private Sector

Office of Civil Defense

DRM Section 8. and IRR Rule 7 Section 1

OFFICE OF CIVIL DEFENSE

Mandate – The Office of Civil Defense (OCD), as the implementing arm of the National Council, shall have the primary mission of administering a comprehensive national civil defense and disaster risk reduction and management program by providing leadership in the continuous development of strategic and systematic approaches as well as measures to reduce the vulnerabilities and risks to hazards and manage the consequences of disasters.
The P/C/M Disaster Risk Reduction and Management Councils (LDRRMC)

- **Chairperson:** Governor / Mayor
- **Members:** Eighteen (18)
  - Local Planning and Development Officer;
  - Head of the LDRRMO,
  - Head of the Local Social Welfare and Development Office,
  - Head of the Local Health Office,
  - Head of the Local Agriculture Office,
  - Head of the Gender and Development Office,
  - Head of the Local Engineering Office,
  - Head of the Local Veterinary Office,
  - Head of the Local Budget Office,
  - Division Head / Superintendent of Schools of the DepEd,
  - Highest-ranking Officer of the Armed Forces of the Philippines assigned in the area, Provincial Director/City/Municipal Chief of the Philippine National Police (PNP),
  - Provincial Director/City/ Municipal Fire Marshall of the Bureau of Fire Protection (BFP), President of the Association of Barangay Captains (ABC),
  - Philippine National Red Cross (PNRC), Four (4) accredited CSOs
  - One (1) private sector representative
The NDRRMC OpCen

- Response Coordination & Resource Mobilization

- Maintains an updated database of all available response resources in the country
- Formulates mobilization SOPs for the response resources and operational support arrangements
- Facilitates the conduct of a post mobilization debriefing for all units deployed and utilized
Concept of Operation

Two conditions in which the OPCEN operates:

1. Normal Condition
2. Emergency Condition

JAPAN’S DISASTER MANAGEMENT SYSTEM
**DISASTER MANAGEMENT ACTS**

**National Level**
- Prime Minister
- Central Disaster Management Council
- Designated Government Organizations
- Designated Public Corporation

Formulation and promoting implementation of Basic Disaster Management Plan
Formulation and implementation of Disaster Management Operation Plan

**Prefectural Level**
- Governor
- Prefectural Disaster Management Council
- Designated Local Government Organizations
- Designated Local Public Corporation

Formulation and promoting implementation of Local Disaster Management Plan

**Municipal Level**
- Mayors of Cities, Towns, and Villages
- Municipal Disaster Management Council

Formulation and promoting implementation of Local Disaster Management Plan

**Residents Level**
Comprehensive Disaster Management System
Disaster Counter Measures Basic Act

- To protect national land as well as citizens' lives and livelihood and property from natural disasters
- Formulates a comprehensive disaster management system
- Addresses all of the disaster phases of prevention, mitigation and preparedness, emergency response, recovery and rehabilitation.
- Establishes roles and responsibilities of the national and local governments and the relevant stakeholders of the public and private sectors

Contents of the Disaster Countermeasures Basic Act

- Definition of responsibilities for disaster management
- Disaster management organizations
- Disaster management planning
- Disaster preventing and preparedness
- Disaster Emergency response
- Disaster recovery and rehabilitation
- Financial measures
- State of Disaster Emergency

Mission of the Cabinet Office

- To integrate and coordinate disaster reduction policies and measures of ministries and agencies.
- To secure cooperation and collaboration among related government organization
- To undertake planning of basic disaster management policies and response to large-scale disasters
- To strengthen risk management function to address emergencies such as large-scale disasters and serious accidents
Central Disaster Management Council

Chairperson – Prime Minister
Members – 27 Head of all ministers
– Head of all Designated Public Corporations
– Governor of the Bank of Japan
– President of Japanese Red Cross Society
– President of Nippin-Hoso Kyokai (Japan Broadcasting Corporation)
– NTT
– President of Nippon Telegraph and Telephone Corporation
– Experts

Duties

❖ Formulate and promote implementation of the Basic Disaster Management Plan and Earthquake Countermeasures Plans.
❖ Formulate and promote implementation of the urgent measures plan for major disasters
❖ Deliberate important issues on disaster reduction according to request from the Prime Minister or Minister of State for Disaster Management (basic disaster management policies)
❖ Other opinions regarding important issues on disaster reduction to the Minister and Minister of State for Disaster Management

Disaster Management Planning System

Basic Disaster Management Plan – This plan is a basis for disaster reduction activities and is prepared by the Central Disaster Management Council based on the Disaster Countermeasures Basic Act.

Disaster Management Operation Plan – This plan is made by each designated government organization and designated public corporations based on the Basic Disaster Management Plan.

Local Disaster Management Plan – This plan is made by each prefectural and municipal disaster management council, subject to local circumstances and based on the Basic Disaster Management Plan.
DISASTER MANAGEMENT SYSTEM

Disaster Management Budget
The national budget for disaster management is approximately 4.5 trillion yen which is approximately 5% of the budget for general accounts

- Scientific and Technology Research: 1.3%
- Disaster Prevention and Preparedness: 23.6%
- National Land Conservation: 48.7%
- Disaster Recovery and Rehabilitation: 26.4%

Disaster Counter Measures

Research and Development
- Scientific technology research in disaster reduction
- Utilization of earthquake early warning information

Disaster Prevention and Preparedness
- National land conservation
- Observing, forecasting and warning of disaster risk
- Information and communication system
- Integrated disaster management information system
- Development of disaster management bases
- Issuing of evacuation orders and instruction
- Measures for people requiring assistance during disasters
- Disaster reduction drills and exercises

Disaster Emergency Response
- Outline of disaster emergency response
- Wide-area support system

Disaster Recovery and Rehabilitation
- Outline of Recovery and Rehabilitation
- Disaster victims livelihood recovery support system
Earthquake Disaster Countermeasures
• Earthquakes in Japan
• Observation system
• Outline of countermeasures against large-scale earthquake
• Countermeasures against Tokai earthquake
• Countermeasures against Tonankai and Nankai Earthquakes
• Countermeasures against trench-type earthquake in the vicinity of Japan and Chishima trenches
• Countermeasures against Tokyo inland earthquake
• Earthquake-proofing of houses and buildings
• Tsunami countermeasures

Volcano Disaster Countermeasures
• Volcano disaster in Japan
• Observation system
• Countermeasures based on the act on special measures for active volcanoes
• Volcano hazard maps

Storm and Flood Countermeasures
• Storm and flood damage in Japan
• Observation system
• Comprehensive storm and flood countermeasures
• Large-scale flood countermeasures

Snow Disaster Countermeasures
• Snow disasters in Japan
• Snow disaster countermeasures

Disaster Reduction Activities
➢ Disaster reduction awareness enhancement and disaster knowledge dissemination
  • Nationwide movement for disaster reduction
  • Disaster reduction week campaign
  • Disaster Education
➢ Improvement of environment for disaster reduction volunteer activities
  • Community voluntary disaster reduction organizations
  • Volunteer Firefighting teams
  • Volunteer flood-fighting teams
➢ Disaster reduction activities of corporation
  • Business continuity plan
  • Evaluation of corporate disaster reduction activities
International Cooperation in Disaster Reduction

Disasters throughout the world
UN World Conference on Disaster Reduction and International Strategy for Disaster Reduction
Japan's International Cooperation in Disaster Reduction
   • Initiative for disaster reduction through Official Development Assistance (ODA)
   • International Emergency assistance
   • Regional cooperation through Asian Disaster Reduction Center (ADRC)
   • Indian Ocean Tsunami Warning and Mitigation System (IOTWS)
   • International Recovery Platform (IRP)
   • Bilateral Cooperation with Indonesia

This Research Study aims to:

Mainstream disaster risk reduction management at all levels. With participation of non-government organization, local and international who extends their assistance through technical and financial support.
The Pampanga River Basin covers a big portion of Central Luzon. Within the CL are four (4) dams: Pantabangan, Angat, Ipo and Bustos.

While the dams serve as structural flood mitigating structures, unfortunately, though, during inclement weather situation, excess waters from the hinterlands on the east and from other river resource from the north simultaneously comes down and inundates vast areas of the provinces of Pampanga, Bulacan and Tarlac.

Built along the Pampanga River, the multi-purpose dam serves as a hydroelectric plant (with power generation of 100 MW) supplying additional energy for Luzon; as reinforcement against flood (with flood control capability of 330 MCM); as an irrigation source for irrigation (covering about 106,400 hectares of rice lands).
Hazard Mapping base on past floods

Partial to complete burial of river segments, tributaries and distributaries
Pampanga River has the largest watershed area—approximately 8290 km²—among the rivers draining the Central Plain of Luzon.

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<th>Province</th>
<th>No. of Municipality at Risk</th>
<th>No. of Barangay at Risk</th>
<th>Farms at Risk</th>
<th>Population at Risk</th>
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</tbody>
</table>
Regional Disaster Risk Reduction Council

Flooding in the Pampanga Delta and Pampanga Bay Area
• Considerations for Hazards Mitigation

Understanding the (some) Types of FLOODS
• RIVER FLOODS
• FLOODS due to Rainwater
• DAM SPILL FLOODS / DAM Break
• COASTAL FLOODS – High Tide, Storm Surge, Tsunami
• FLASH FLOODS
Flooding in the Pampanga Delta and Bay Area: Natural Causes

- Large watershed size
- Low elevation
- Gentle ground slope
- Vegetation loss
- Land subsidence
- Storm surge, tsunami
- Eruption and lahars of Pinatubo Volcano

Flooding in the Pampanga Delta and Bay Area: Man-Made Causes

- Constriction of waterways
- Increase in runoff due to pavements
- Siltation of rivers by agricultural, industrial, commercial and household wastes
- Groundwater extraction?
- Non-integrated flood-control projects
Net Effects of Short- and Long-Term Lahars on the Lower Reaches of River Systems

1. Partial to complete burial of river segments by lahar deposits.
2. Heavy siltation along river segments of tributaries and distributaries upstream and downstream of the lahar deposits of the Porac-Gumain and Pasig-Potrero river systems
3. Sediment-choking of man-made and natural drainage systems

NET RESULT = LONG-TERM FLOODING

1991 Pinatubo Eruption:
PRIMARY CAUSE OF LONG-TERM FLOODING IN THE PROVINCES OF PAMPANGA, BULACAN AND BATAAN

1. Remobilization in 1991 of ashfall and pyroclastic-flow deposits within the watershed of the Porac-Gumain River as short-term lahars.
2. Remobilization in 1991 of ashfall deposits within the watershed of the Caulaman-Orani River as short-term lahars.
OTHER CAUSES OF FLOODING:

1. Improper disposal of dredging spoils
   a. along river banks
   b. along river channels
2. Construction of fishponds along river channels
3. Extension of fishpond structure into river channels
4. Westward growth of Barangay Malusac
5. Natural accumulation of sediments at river mouths

**NET EFFECT:** Reduced carrying capacity of river channels

**NET RESULT** = Flooding
Encroachment of Informal Settlers

Improper garbage disposal
Floods due to accumulation of rainwater (Ponding)

Breaching of river structures
Current initiatives in DRR

A Locally-based Flood Warning System
Structural Flood Mitigating Measures
(some examples)

**Dam**

**Widening & Straightening**

**Bank Protection**

(Some) Non-Structural mitigating measures

Zoning

Reforestation

FFWS
Flood Forecasting & Warning Systems

Arayat
Adaptation

Non-Structural Mitigating Measures

PRWFC ®

Dredging Works

Declogging-
Desilting of Rivers

2010/11/24
Community-friendly Flood Hazard maps

Flood warning signs
Communities that are prone and vulnerable to flood disasters are particularly the main target areas.
Installation of rain gages

Installation of river gages
Install Flood markers

Flood time monitoring?
- start of flooding
- Peak & level
- Flood subsided

Disaster Preparedness & Prevention, & Contingency Planning Seminars, etc..
OPERATION ALERT CODES

for Evacuation for Flooding Incidents and Release of Water from Dams
OBJECTIVES:

1. To have a uniform warning and alert system for evacuation during flooding incident caused by inclement weather conditions and release of water from dam;

2. For officials of every local government units or local disaster coordinating councils to formulate their respective plans for action during every alert levels; and

3. Heighten the level of awareness of the community on when to be ready, get set and evacuate in case of flooding in their respective areas.

Unfortunately, Early Warning (System) & Disaster awareness sell themselves only AFTER a disaster strikes a community!!
ALERT LEVEL No. 1

Represented by a long siren. This is the alert level where people are advised that there will be a release of water from the dam and to prepare for possible evacuation.

The fire trucks from BFP, LGUs and volunteer groups in the area will be utilized to give the warning signals.

ALERT LEVEL No. 2

Represented by two (2) long sirens. This alert level signifies get ready for evacuation and wait for further instructions coming from authorities.
ALERT LEVEL No. 3

Represented by a continuous siren or continuous ringing of bells. This alert signifies the community to evacuate immediately to designated evacuation centers. No person should be left behind and bring only important things.

Research Study in Japan
Legislation on River Administration

- The first River Law in 1896: focusing only on flood control
- Revised in 1964: water resources usage added
- The latest River Act made in 1997
  - Ecological factors were added
  - Obliged managers to make
    - Basic river management plan
    - River improvement plan

River Planning System

- Long term e.x. 100 years
- Short term 20-30 years
Outline of River System

Comprehensive Flood Management Measures

- River improvement
  - Channel improvement (e.g., embankment, dredging)
  - Construction of retarding basins, floodways
- Runoff control
  - Maintenance of controlled urbanization districts
  - Conservation of nature
  - Control of landfill
  - Construction of reservoirs and regulating basins
  - Installation of permeable pavements and seepage sumps
- Low-lying areas
  - Preservation of urbanization control zones
  - Promotion of conditions favorable to agricultural activities
- Detention areas
  - Development of interior drainage facilities
  - Construction of storage facilities
  - Encouragement of use of floodproof buildings
- Retention areas
  - Establishment of warning and evacuation system
  - Augmentation of flood-fighting management system
  - Publication of the maps of historical inundation areas and flood-prone areas
  - Encouragement of use flood-proof buildings
  - Dissemination of information among local residents

Damage mitigation measures
Traditional flood control measures: River improvement and Dam Construction

Building of embankments
Widening embankments to increase flow capacity.

Excavation of channel
Excavating channel to increase flow capacity and lower the water level.

Dam
Flood waters are stored in the dam to reduce the quantity of flood flow to be transported downstream and to lower the water level.

Construction of underground floodways and underground regulating reservoirs is an effective means of solving the problem of urban flooding.
Design
Flood
Discharge
(1,820 m³/s)

Amendment of the River Law

Introduction of integrated river system management
Enhancement of water-use regulations
Improvement and conservation of river environment
Introduction of plans reflecting public opinions
Tasks of River Administrator

Flood management
River water use management
River environment management

Activities of River Administration Offices

Observe rainfall, river water level, river water quality
Research the environment of river and river basin
Study river improvement and environment
Plan, design and construct river structures
Patrol to observe problems of structures, illegal acts
Administrate use of river area

Flood Forecasting Network
Information Dissemination

Flood Control and River Management
Flood Control Facility

Slope Protection Facilities
Slope Protection Facilities

[Images of slope protection facilities]
Water Sediment Control

Monitoring and Early Warning System
- Orientations/Trainings/Seminars
  - Orientation on the Japanese history, culture, customs, religion, art and traditions.
  - Orientation on by Japan’s Government and Disaster Management System, and the different hazards that affected the country in years 1923, 1945, 1948, 1959, and 1995 – the Great Hanshin Awaji Earthquake that affected Kobe and its surroundings.
  - Orientation on Hyogo Prefecture its population 5.6 million, land area of 84,000 sqkm composed of 29 cities and 12 towns with an annual GDP of US$179.74 billion that its income was derived from containerized transportation also about its world heritage the Himeji Castle and hot springs, the Akashi Kaikyo Bridge as one of the largest hanging bridge in the world.
  - Orientation how to prepare and update our country report, ADRC website and to update our country profile.
  - Attended presentations of Indonesia Disaster Management System and about Maiko High School, Sensei Mr. Sawa-san explained how the Disaster Management Course was developed and introduced in school.
  - Participated in JICA’s Training of Trainers’ for Public Awareness Method: Twon Watching & Hazard Mapping Workshop with the participants from Central Asia.
Continuation of Orientations/Trainings & Seminars

- Visited and attended orientation in Maiko High School, Mr. Suwa-san Seiji lectured us about the Japanese Education System which comprise of 6 years elementary, 3 years junior high school, 3 years senior high school and 4 years college. High school students has freedom to choose for a vocational or special course like disaster management course. Disaster Management Course started after the 1995.

- Joined JICA trainees from Central Asian in Kyoto University where we have lectures from the Disaster Research Institute (DRI). Professor Katao of the Disaster Prevention Institute discussed disaster prevention, disaster reduction/mitigation, earthquake/volcano prediction and earthquake engineering. He also explained about the organizational structure of DPRI and research studies for earthquake monitoring and prediction.

- Professor Fukouka explained about landslide, different types and causes of landslide, mitigation and countermeasures, observation and monitoring system of landslide in Japan also the different observation and monitoring equipments for landslide.

- Mr. Sakurai-san Director of Shikoku Mountainous Region Sabo Work Office lectured about Shikoku Island.
  - Shikoku has 4 Prefectures and is a mountainous area with steep slopes which makes it prone to landslide during rainy season and has 2 major tectonic.
  - Sabo Work Office is promoting prevention and mitigation projects, constructing and monitoring facilities, enhancing embankments, dams and preventive structures, installing drainage wells, tunnels, horizontal pipes and water ditches to drain and stabilize soil subsidence.
  - They also have 16 optical cameras, GPS and rain gauges that transmits information for use in warning residents in risk areas.
Continuation of Orientations/Trainings & Seminars

A lecture about dam construction and operation was presented by Mr. Shozo Miyagawa, Director of Samuera Dam, the dam was built in 1975 for 331 million yen and relocated 387 families. Samuera Dam height 106m, crest length 400m, concrete volume of 1,187,000 cbm and a gross capacity of 316,000,000 cbm. Water were use for household, irrigation, power generation and flood control.

Continuation of Orientations/Trainings & Seminars

- Orientation on Global Unique Disaster Identifier (GLIDE) as a tool for information sharing of disaster data base among different organization regarding natural disasters. Its purpose is to unite differences in reporting disaster events.

- Orientation on Business Continuity Plan, its company should have their own business continuity plan to unsure continuance of their operation after a disaster and also International Standardization of products manufactured for the quality and acceptance of such products in local and international market.

- Orientation of PEER Review which aims to help member countries to identify good practices and methods for disaster risk reduction and to further promote the implementation of the Hyogo Framework for Action (HFA) through exchange of ideas, information and engaging member countries in a face to face discussion.
• Mr. Yasutsugu Fujii of the Department of River Management oriented us about Osaka Prefecture that it has 2,750,000 population, 12 cities and 48.7 trillion yen assets. Due to its geographical location makes the area prone to flooding. It has 6 rivers, heavily populated and concreted resulting to slow water drainage. Osaka has experience many flooding in the past hence the following measures were undertaken improving of river channels, creating underground drainage system, drainage basin, and flood control reservoir. They also use parks, school grounds and private development sites for temporary water retention.

• Attended briefing/orientation at the Hyogo Prefectural Emergency and Fire Training Center. The 5 instruction based on the Hanshin-Awaji earthquake were: 1) provision for natural disasters; 2) setting up a system at the initial stage; 3) collaboration between disaster management organization; 4) capacity building for the community; and 5) Planning/modelling the town against natural disaster. The place is 250 has with tennis court, football, track and baseball field, a camping site, golf and heliport. Gymnasium that doubles as a disaster prevention hub for emergency preparedness center for storage of relief supplies, rescue equipment and assembly for emergency activity.
- E-Defense is an area for 3-D full scale earthquake testing facility, it has a display of different types of buildings, different construction design and structure it also explains different damages in case of an earthquake based on its construction, structure and design. The is also utilized for earthquake simulation test exercises.

• Mr. Mashiro Ito-san, Deputy Director for Disaster Preparedness presented the Japan’s Disaster Management System and Japan’s disaster experiences. The Disaster Management System at the National Level headed by the Prime Minister, Prefectural Level headed by the Governor, Municipal Level headed by Mayor’s of the City or Municipality and residential level. The organization consist of 23 ministries and agencies, 63 designated Public Corporations and Bank of Japan, Japanese Red Cross Society, NHK, Electric and Gas Companies o NTT.

• Tokyo Metropolitan Government orientation started TMG’s crisis management measures, different disaster it might face such as earthquake, storm and flood, volcanic disaster, large scale accidents, terrorist attacks and Novel Influenza Virus. And the different preparedness and countermeasures for each and conduct of drills and exercises.
Orientation at the Air Asia Survey is an spatial information consultant company its mission is to provide novel state of the art technologies and know-how for acquiring and managing a wide range of spatial information about the natural and social environments – presented the company’s organization, corporate profile scope of services in areal mapping such as red relief image map, lake view, land viewer, their global activity and the recent projects of the company. Also the importance and benefits of areal mapping.

Fire and Disaster Management Agency is the center for the fire defense administration supporting the nation’s fire defense forces consisting of 1 million personnel. It formulates various measures to prevent disaster such as fire, earthquake, storm/flood damage and develops necessary legal basis and improve armaments, equipments necessary to minimize damages.

Japan Meteorological Agency (JMA) contributes to the safety of the people in the country by providing a range of meteorological, oceanographic, seismological and volcanic information. It improves its services by incorporating advance technologies and checking the management and performance of its operations continuously with the aim of enhancing effectiveness and efficiency of its activities to cope with new demand. JMA implements its services in compliance to Act for establishment of the Ministry of Land, Transport and Tourism (MLIT) and the Meteorological Service Act: prevention and mitigation of natural disasters; safety of transportation; development and prosperity of industry; and improvement of public welfare. Its efforts is focused on monitoring earth’s environment and forecasting natural phenomena related to atmosphere, the ocean, and the earth. It also conduct research and technical development in related fields. It also engages in international cooperation activities in meteorology and seismology.
•NHK as a member of the disaster management system it provides warning information to the general public. The company has 54 broadcasting stations, 14 branch station and radio stations (AM/FM) with 1,000 reporters and can utilized 10,000 personnel in time of emergency. All programs are cut both on TV and Radio broadcast in times of emergency to provide wide range warning information to the general public.

•Mr. Yuichi Honjo-san of the Institute of Urban Research has discussed lessons learned from the Great Hanshi-Awaji Earthquake, the damages, loss of lives, the city recovery plan and the comprehensive recovery assessments after the 5th and 10th year from the earthquake. He also talked about social capital as a resource that supports the practice of collaborative and participatory community development based on self-governance and community solidarity. Physical recovery such as housing, infrastructure has been fully achieve by Kobe City and the vitality of community participation in disaster activities after 15 year is decreasing and their memory of the disaster is also fading. Maintaining and sustaining community participation and awareness is a challenge to all disaster management practitioners. There is a need to find new ideas, activities to steer community concern that is acceptable and fitting to the community.

Visit to Unzen Restoration Work Office, Mr. Kodama-san oriented us about Unzen Restoration office which was established in 1993 after the Heisei Eruption. Among their project were Unzen Sabo Project (erosion control); present condition of lava domes; conditions of developing gullies; occurrences of debris flow; implementation of projects in Mizunshi River Basin, Nakao River Basin and Yue River Basin and creation of communities full of water and verdure.
Unzen Volcanic Geopark, Mr. Shinichi Sugimoto discussed the eruption of Mt Unzen and that it had 44 fatalities most of them were media men and rescuers from Shimabara. The media men have crossed the danger zone line. Mt Unzen last erupted in 1792 and Mt. Mayuyama collapse in a large scale earthquake just after eruption. Lava dome formed during 1990-1995 eruption. Debris avalanche buried nearly half of town and generated a huge tsunami. Mt Unzen is the well-studied volcano in the world. UNESCO has declared Mt. Unzen as a Geo Park, it is also the first national park in Japan, it also have a museum where we can see a house buried by debris flow and an elementary burnt pyroclastic flow. It also has historical sites, a volcano museum, geotours, hot springs and the area is fertile soil around the volcano.

Mr. Shiraishi Naotsugu of Fukouka City Disaster Management Office oriented us about the disaster management system of Fukouka City. Fukouka City is flood disaster prone area due to its geographical location has 7 rivers which its main source were outside the city. He also discussed their prevention and mitigation measures like preparation and distribution of hazard maps, surveillance camera along river basin, installation of remote controlled sirens in the river basin and information dissemination through mobile phones, advisories, how to protect oneself, evacuation areas and routes, improvements of disaster control, voluntary organization, and their support to anti-disaster and preventive organization.

Global Warming and Climate Change in Japan discussed by Mr. Nagata Yoji, Deputy Director, he talked about the IPCC fourth assessment report, mechanism of global warming, initiatives to address the issue of global warming by Japan Meteorological Agency (JMA), global warming and climate change in Japan and efforts to reduce emission of greenhouse gases.
• Hyogo Prefecture Museum of Art - here we have seen a film depicting Great Hanshin-Awaji Earthquake in 1995 that devastated the City of Kobe and its surrounding areas, walked along the ruins preserved, seen the grief and loss of the communities as they recount what happened that time, how they have help one another and the volunteerism of the community in saving lives of their neighbours, cleaning up debris and also the reconstruction and recovery of roads, railways as well as setting up temporary shelter for evacuation and relief operations.

Hokudan-cho Earthquake Memorial Park in Awaji Island in this museum we see photos of the Great Hanshin-Awaji Earthquake a monument of Hanshin expressway, preserve fault zone, a close-up view of change in fault, and an earthquake simulation and a house preserved after the earthquake.
• Tsunami/Storm Surge Disaster Prevention Station - comprises the disaster prevention building and display building. It provides collective for tsunami and tidal surge protection facilities like seawalls and gates administered by Nishi Osaka Flood Control Office. It also entails enhancement of public awareness of disaster prevention among Osaka residents. Display building is open to public to gain knowledge of tidal surges that struck Osaka and Tonankai/Nankai Earthquakes and tsunamis believed to surely hit Osaka.

• Nigawa-Yurino-cho, Nishinomiya City Landslide Museum – Nigawa-Yurino-cho area suffered the worst mass-movement disaster caused by the Great Hanshin-Awaji Earthquake, a 100m-long hillside on the right bank of the Nigawa River collapsed, approximately 1,00,000m3 of displaced soil crushed 13 houses and blocked the Nigawa River, killing 34 people. An emergency landslide rehabilitation project was initiated in 1997. At he museum we learn the awesome power of nature what it is like to be in a landslide. A display that explains the structure and mechanics of a landslide, a scale model shows what measures taken to prevent landslide. Using various instruments we can measure small movements of earth in order to know when a landslide is imminent. By removing subterranean water and inserting supports into the ground we can prevent landslide before they occur.
Mt. Unzen Disaster Memorial Hall also known as “Gamadasu Dorm” was built not only as tourist attraction but also as a facility for people to know and learn about volcanic eruption.
International Symposium & Global Meeting

• Attended First Global Meeting of the International Search and Rescue Advisory Group (INSARAG).

International Symposium & Global Meeting

Attended Urban Safety of Mega Cities in Asia
Attended the Group Training on “Disaster Risk Reduction Strategy for Urban Earthquake” RCUSS, Kobe University & JICA Hyogo International Training Center.

Visited Nagasaki Atomic Bomb Museum. An atomic bomb was dropped in Nagasaki at around 11:02 am on August 9, 1945 where most of Nagasaki was destroyed and a tremendous lives was lost and a great number have been injured and some of them are still suffering the effects of the bomb up to present. The marks and scars have never been erased form the skins and minds of those who have survived.
Visit to Kobe City Resources Recycle Center. Mr. Hagihara Kazuhiro explained about their work at the Center. Indeed the center displays a state-of-the-art recycling facilities which are almost all are automatic and are computer generated machines. He showed us the process and some products they produced out of glass, PET bottles, cans and aluminun waste.

Action Plan
<table>
<thead>
<tr>
<th>Proposed Activities</th>
<th>Responsible Agencies</th>
<th>Expected Output</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Presentation of the research study</td>
<td>OCD</td>
<td>Dissemination of learning experience gained in this research study program</td>
<td>To share learning experience here in Japan to RDCC Member Agencies</td>
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<tr>
<td>2. Review of the current flood control and mitigation measure</td>
<td>NEDA/OCD/DPWH/LGUs</td>
<td>An inventory of current flood control and mitigation measure or undergoing projects Assess strengths and weakness of current flood control and mitigation measures Identify future plans or improvement needed to enhance mitigation, monitoring and development measures</td>
<td>To check the current situation of flood mitigation and control plans and programs and identify areas for improvement</td>
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<td>3. Analysis of rainfall in respect to climate change</td>
<td>PAGASA/CCA</td>
<td>To assess capability of dams, flood mitigation facilities with the current changing climate and enhance capabilities and resiliency of the community</td>
<td>To determine the amount of rainfall and project its occurrence that could affect the community and plan for community adaptation to Climate change and enhance resiliency</td>
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<tr>
<td>4. Risk assessment</td>
<td>OCD/DILG/DPWH/NEDA/PAGASA/LGUs/Community</td>
<td>Generation of digital hazard maps to identify communities at risk Analyze needs</td>
<td>To identify needs and enhance capacity to cope with impact of disaster</td>
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<td>5. Capacity assessment</td>
<td></td>
<td>Identify LGUs/communities capacity in coping with disasters</td>
<td>To train the community to respond and react appropriately in times of disaster. To train rescue teams</td>
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<td>6. Community vulnerability assessment</td>
<td>OCD/DILG/DSWD</td>
<td>Profiling of communities Flood control and mitigation system its present condition and identification of counter measures</td>
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<td>7. Institutional Building</td>
<td>OCD/DILG/DSWD</td>
<td>Organization/Re-organization of Disaster Risk Reduction Management Council at the Provincial/Municipal/Barangay and Community level, NGOs, NGAs, Pos, etc</td>
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<td>8. Planning and development</td>
<td>OCD/DILG/DPWH/NEDA/PA GASA/LGU/LGUs/Community</td>
<td>Formulation/updating of disaster risk reduction Management Plans, contingency plans, development plan</td>
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<td>9. Social economic environment</td>
<td>OCD/DILG/DSWD/LGU/LGUs</td>
<td>Poverty reduction/Livelihood/Civil Protection</td>
<td>Poverty reduction</td>
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<tr>
<td>10. Research Studies</td>
<td>OCD/LGU</td>
<td>Research study on the threat of Lahar flow and a comprehensive solution to constant flooding problems (Pampanga, Tarlac, Bulacan, Zambales and Bataan) An additional dam to impound water for agriculture and household use as one possible solution. Part of the lahar quarrying income can be set aside to support river improvement in Pampanga and other areas</td>
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Arigato Gozaimasu Sayonara!!!!!

![Image of two people in water with a bucket]