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# Disaster Preparedness for Natural Hazards in Japan (Case Studying in Hyogo Prefecture)



**N.P Madawan Arachchi**  
**Visiting Researcher**  
**(Aug-Nov2014)**  
**ADRC**

Assistant Director (Preparedness)  
Disaster Preparedness Planning Division  
Disaster Management Center  
Sri Lanka



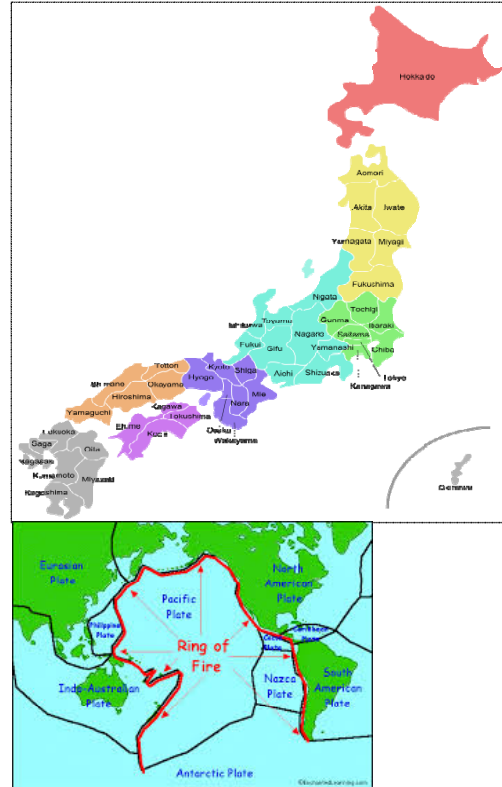
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1. Introduction
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4. Results and Discussion on Hyogo peoples Preparedness
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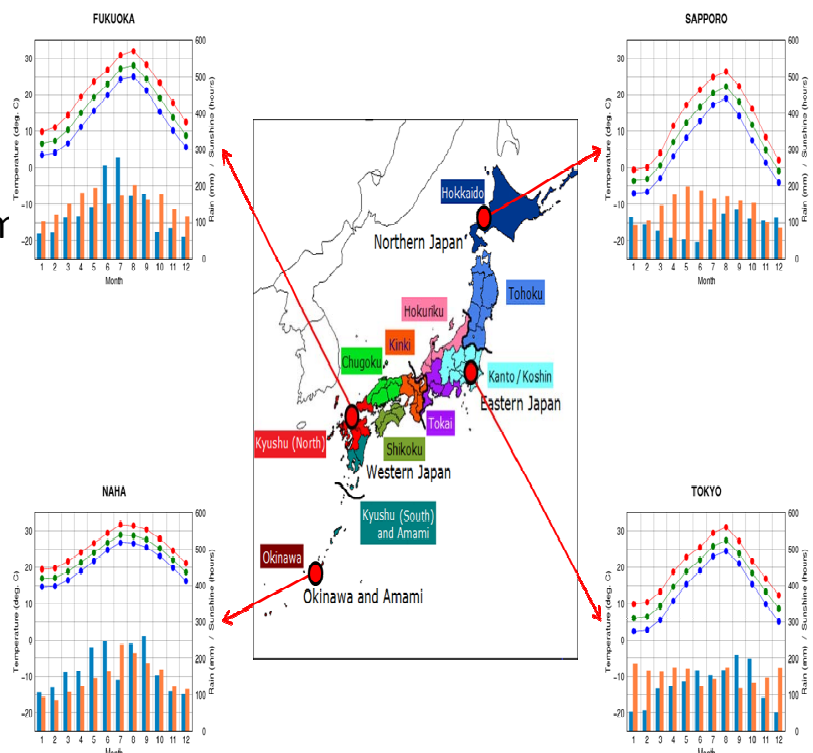
# Introduction

- Japan is a stratovolcanic archipelago of 6,852 islands (Wikipedia)
- 126 million people (tenth-largest population)
- Japan is considered as island nation
- The main four largest islands are Honshu, Hokkaido, Kyushu and Shikoku (97% of total island)
- Philippine plate, Eurasian Plate, North-American plate and Pacific plate
- Pacific Ring of Fire
- Tokyo is the world largest Metropolitan with 30 million people



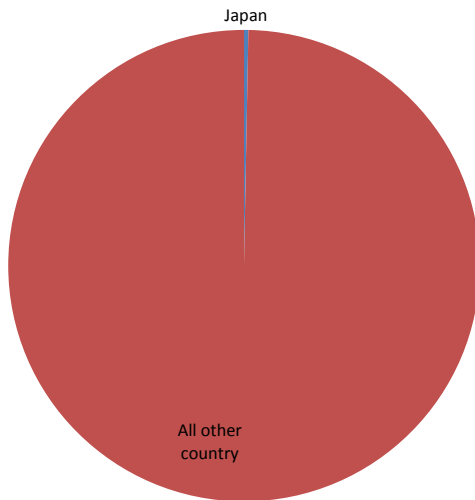
## Climate of Japan

- Four seasons
- Experiencing extreme climate events

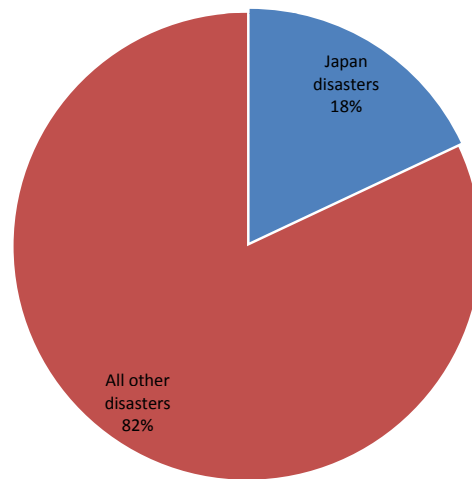


# Comparison of Area and Disaster in Japan with world

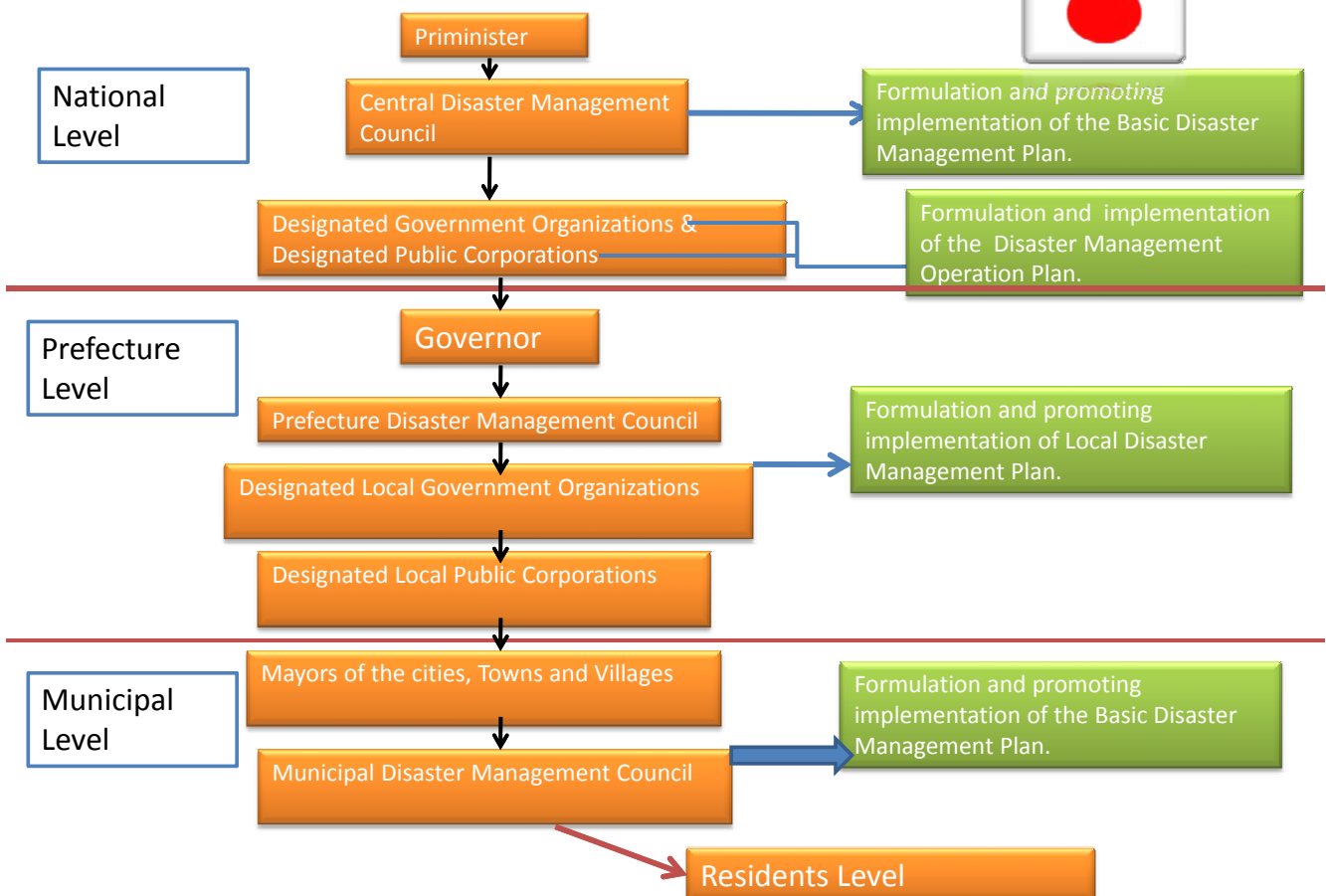
Land area of Japan in the world



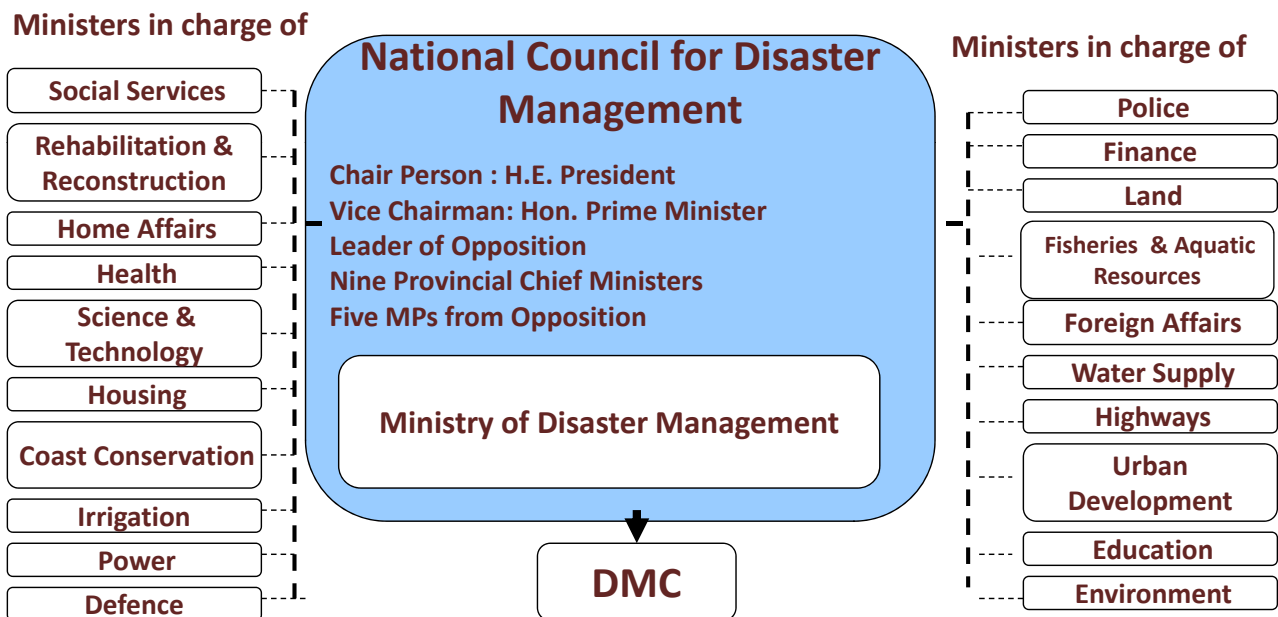
Disasters comparison



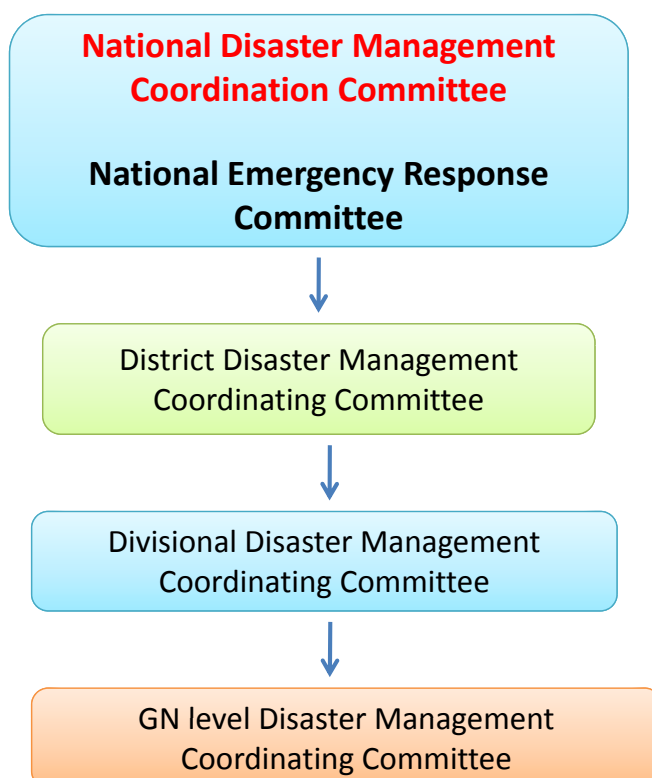
## Disaster Management System in Japan



# Disaster Risk Management in Sri Lanka

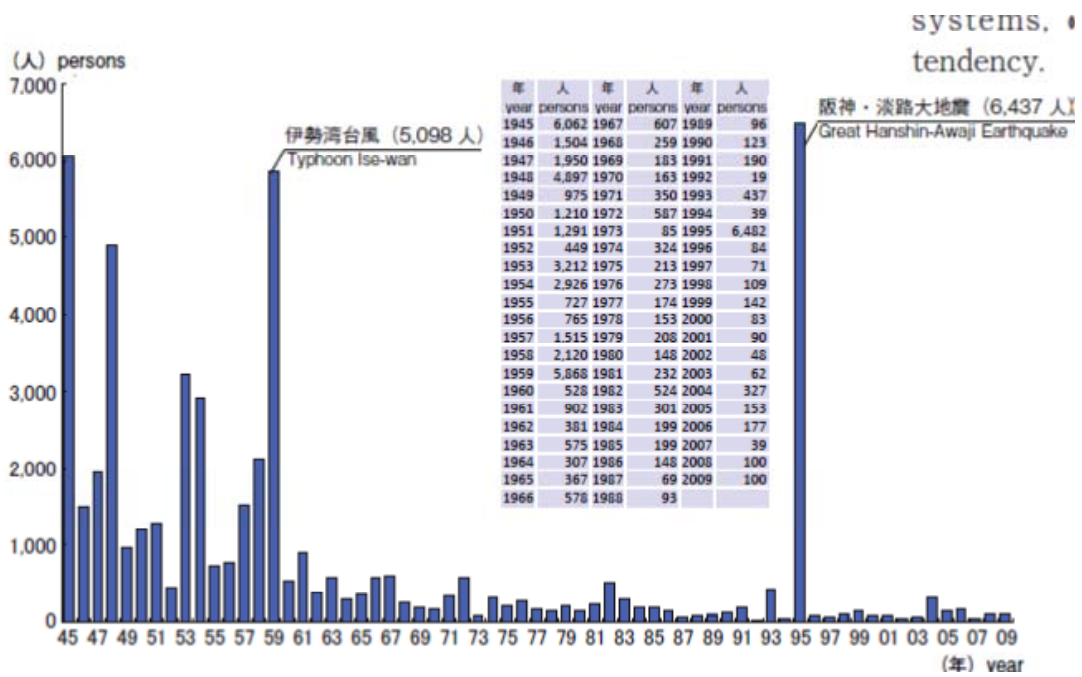


## Disaster Management Mechanism



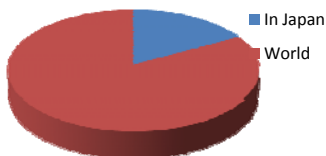
- National Council for the Disaster Management, Chaired by President of Sri Lanka.
  - Disaster Management Policy
  - Disaster Management Act
- Disaster Management Plan
  - **National Disaster Management Plan**
  - **Disaster Preparedness and Emergency Response Plan**
  - Early Warning Plan
  - Emergency Operation Plan
  - SOPs
  - Mitigation Plan
  - Rehabilitation and Reconstruction plan
- **Sub Committees for Response**
  - Early Warning dissemination
  - Evacuation, Search & Rescue
  - Relief camps, Food and Security
  - Health and Welfare
  - Restoration of Services, Reconstruction and Rehabilitation

# Natural Hazard in Japan



## Earthquake

No of earthquake magnitudes



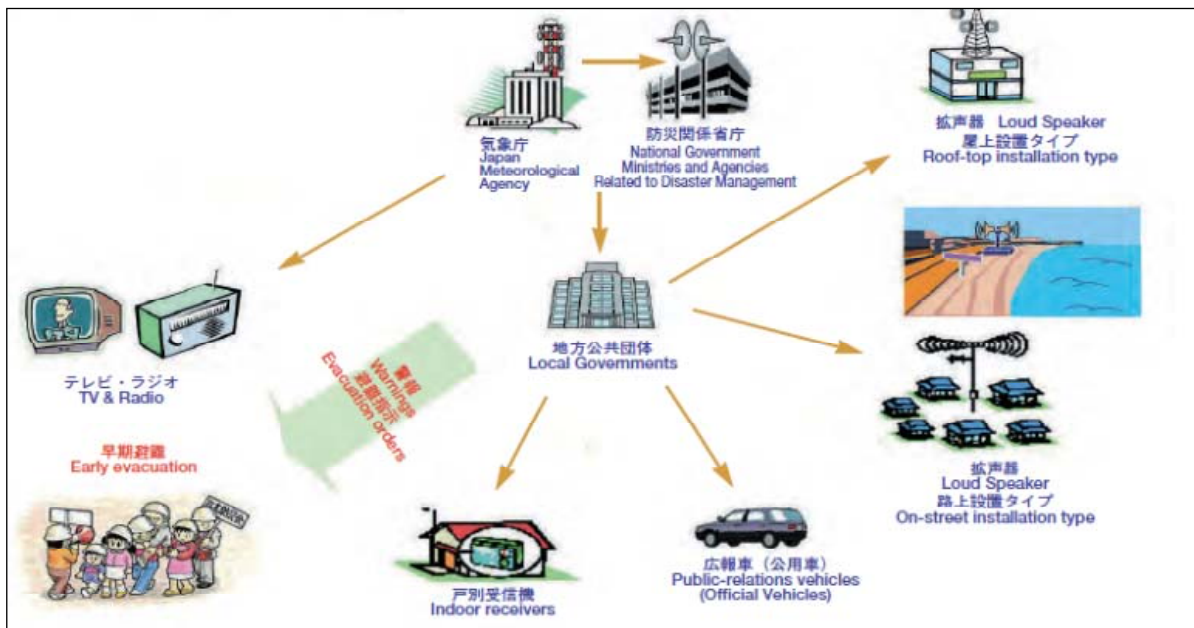
Date	Magnitude	Name of quake	Epicenter	Death toll
September 1, 1923	8.3 M	1923 Great Kantō earthquake	Izu Ōshima	142,800
January 17, 1995	7.2 M	Great Hanshin earthquake	northern end of Awaji Island	6,434
March 11, 2011 05:46:23 UT (14:46 JST)	9.0 M	2011 Tōhoku earthquake	38.510° N, 142.792° E, depth 24.4 km	15,889 deaths, confirmed.

# Typhoon

Year	Typhoon	Death Toll
1945	Makurazaki Typhoon	3,756
1947	Catherine Typhoon	1,930
1948	Ion Typhoon	838
1949	Kitty Typhoon	160
1950	Jane Typhoon	539
1951	Ruth Typhoon	943
1954	Toyamaru Typhoon (with big ferry shipwreck)	1,761
1958	Kanogawa Typhoon	1,269
1959	Ise-wan Typhoon	5,098

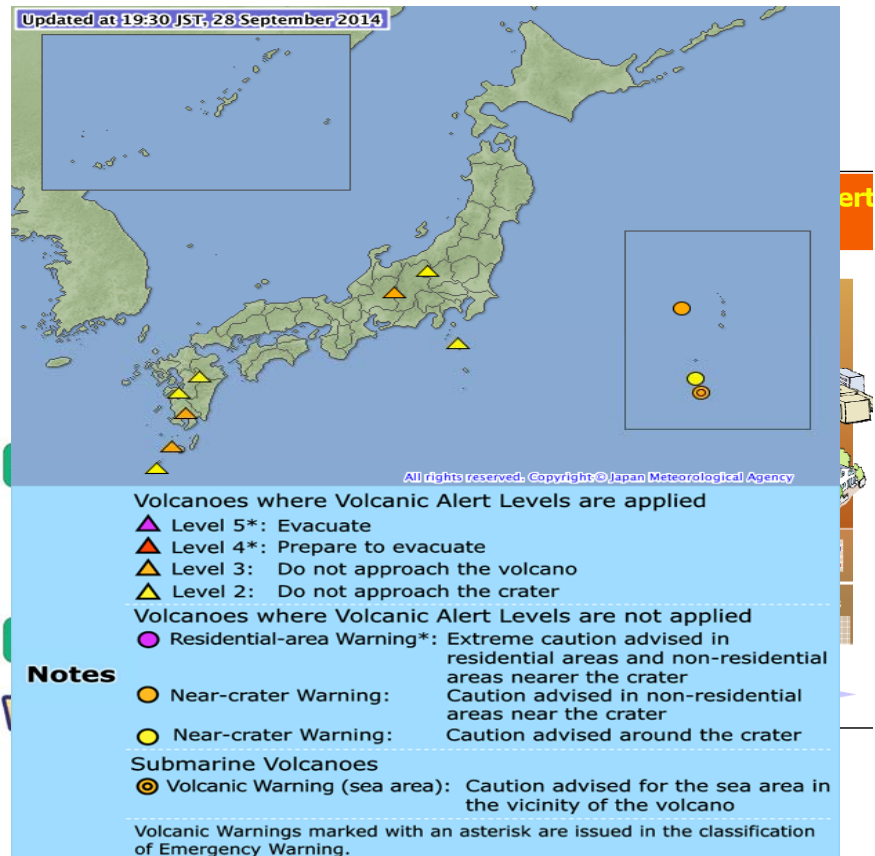
- Floods and Landslide secondary hazards

## Early Warning Dissemination Mechanism in Japan





- Tsunami Warning
- Earthquake EW
- Volcanic disaster
- Real time earthquake monitoring system in Japan
- Extreme weather warning



## Objective of this studying

- Studying the Japanese Disaster Risk Management System, Legal framework and related preparedness planning countermeasure.
- Studying Hyogo prefecture's people's preparedness for natural hazards and evaluates the success of the CBDRM program.
- Getting exposure participation DRR activities by Japanese authorities

# Methodology

Basically, with objective of VR program, studied the Japanese DRM system.

Followings activities were practiced for studying and data collection

- Official visiting of government offices responsible for DRR in Japan
- Collection of written information and data in relation to DRM in Japan.
- Collection of laws, act and circulars relating DRM issues
- Participation of International Disaster Symposiums on DRR
- Participation for the presentations delivered by different government organizations
- Key informant discussion, scientific discussion with professors
- Participation of CBDRM and other DM program
- Town watching program
- Participation of disaster drill

**Conducted a survey for studying the Hyogo Prefecture people's preparedness for natural hazards**

- Preparation of questioner with 30 questions
- Pre-test carried out for staff and a few people
- Online survey strategy
- Sample size was 40

# International Symposium attended

- International Symposium on DDR in Kobe University
- International Symposium on Water Hazard at Tokyo National Graduate Institutes for Policy Studies
- International Symposium on Disaster Risk Reduction (Earthquake) in Kyoto University
- International Workshop on Disaster Risk Management at Tohoku University
- International Symposium on Asian Disaster Studying at Kanagawa University



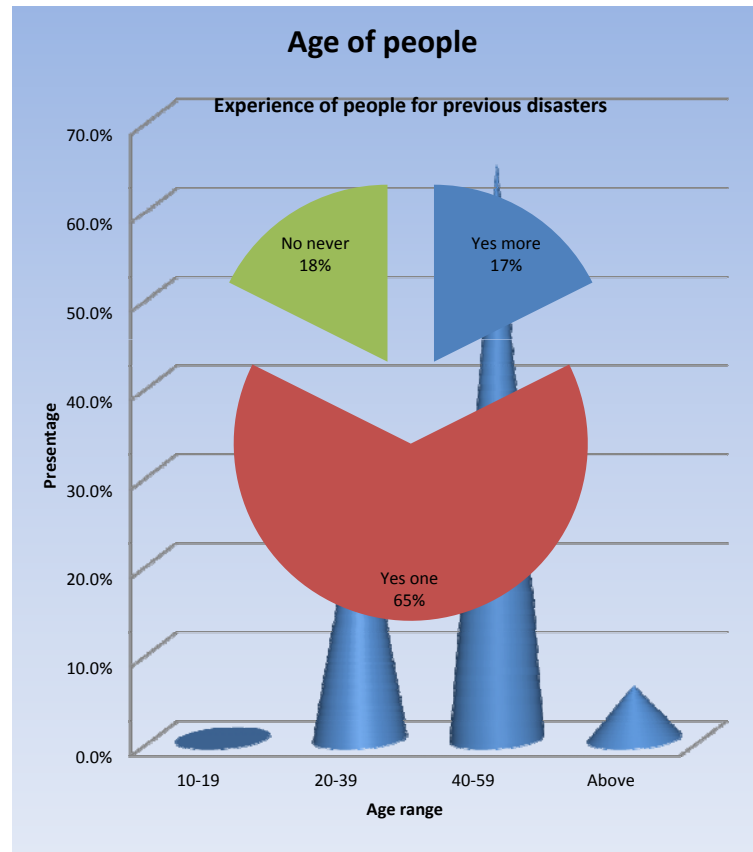
## Results and Discussion

1. **General disaster education and disaster experience**
2. **Early Warning and Evacuation behaviors**
3. **School education and community based DRM**
4. **Pre-disaster preparedness activities**

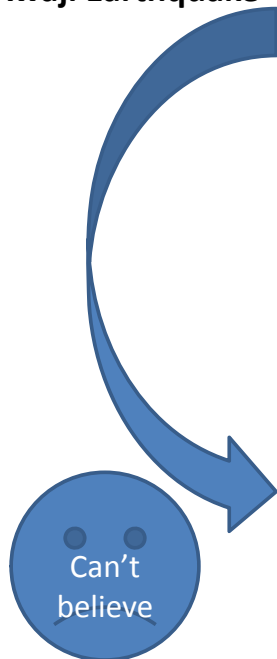


# Results and Discussion

People's experience on past disaster and their age



## People's experience on Hanshin Awaji Earthquake



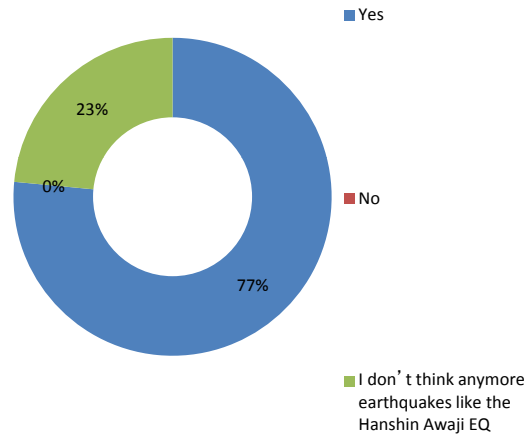
People's experience on Hanshin Awaji Earthquake	
Yes, I have an experience on Hyogo Prefecture's impact	82.4%
I have heard about that EQ (because I was not born or I lived in other prefecture)	14.7%
No	2.9%
Severity of impact experienced disasters	
Yes, extremely terrible	20.7%
Yes severely affected	20.7%
Yes some effect	48.3%
Yes, but it was not reported any significant impact	10.3%

## People's idea on possibility of occurrence large scale earthquake

77% believe large scale EQ

24% Don't think

Possibility of occurrence big earthquake

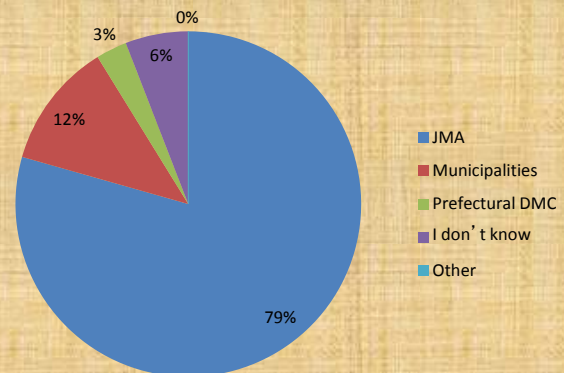


24%???

## People's knowing on EW issuing agency

People's knowledge on EW issuing agency is appreciable

Knowledge on EW issuing Agency

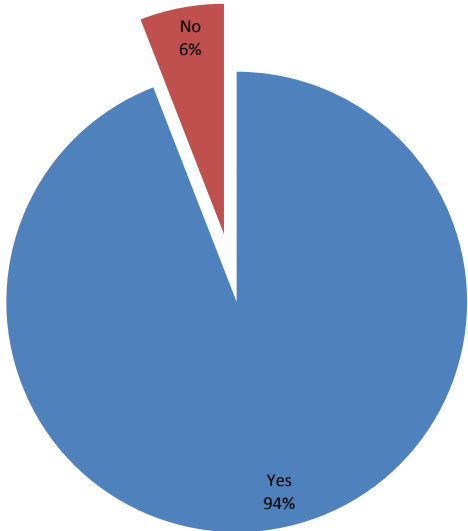


Usefulness of Earthquake EW

Usefulness of Earthquake  
Early Warning

94% believe it is .....

Useful

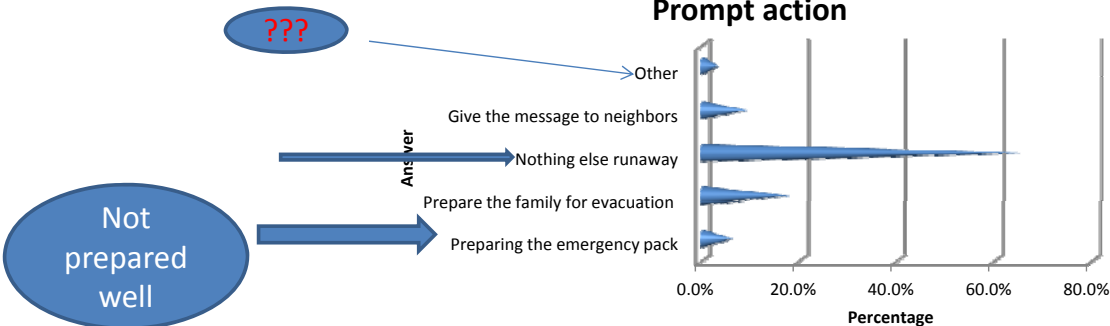


People's decision on  
evacuation

62% willing to evacuate

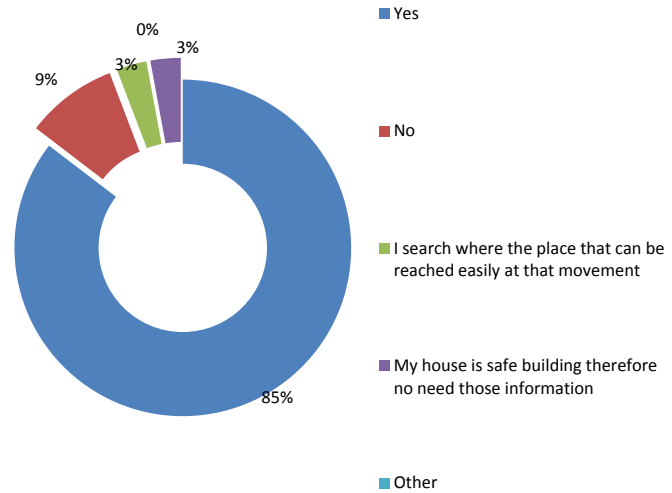
Prompt action is immediately evacuate

Answer Options		Response Percent
A)	Yes	61.8%
B)	No	38.2%



### Identification of evacuation route and center

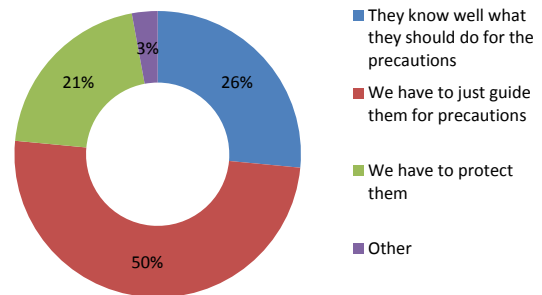
### Evacuation Centers



## Children's emergency response behaviors

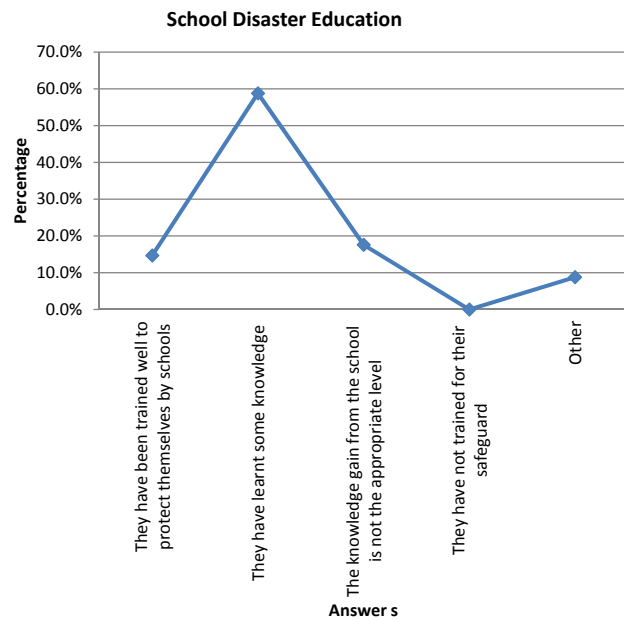
76% parents are confident enough on children's emergency response behaviors

Parent's satisfaction on children's disaster response

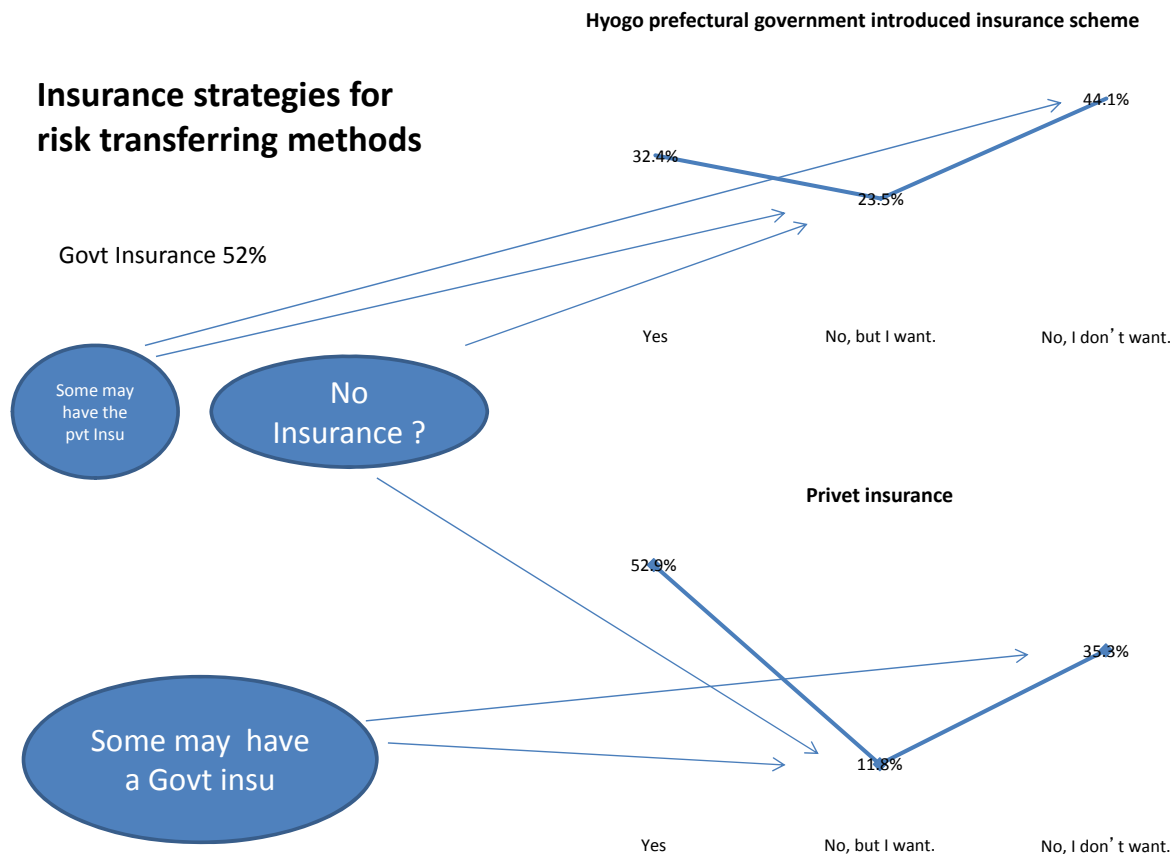


# Parents' idea on school disaster education

75% parents have sounds idea on Children's DM education



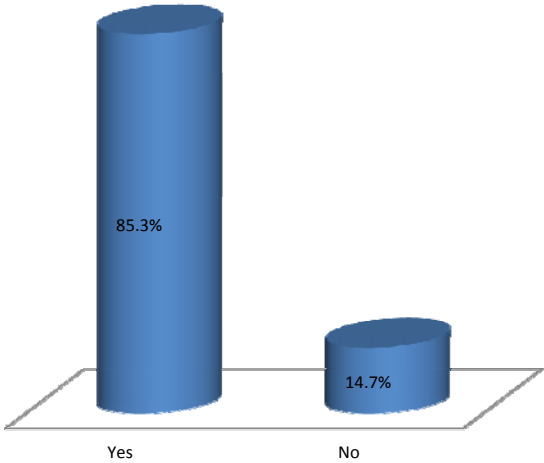
## Insurance strategies for risk transferring methods





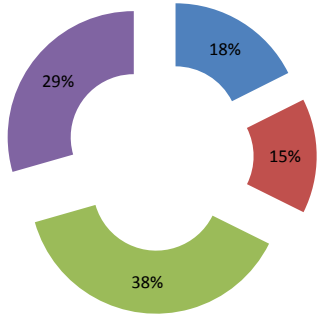
# Participation of Disaster Management Program

participation of awareness program



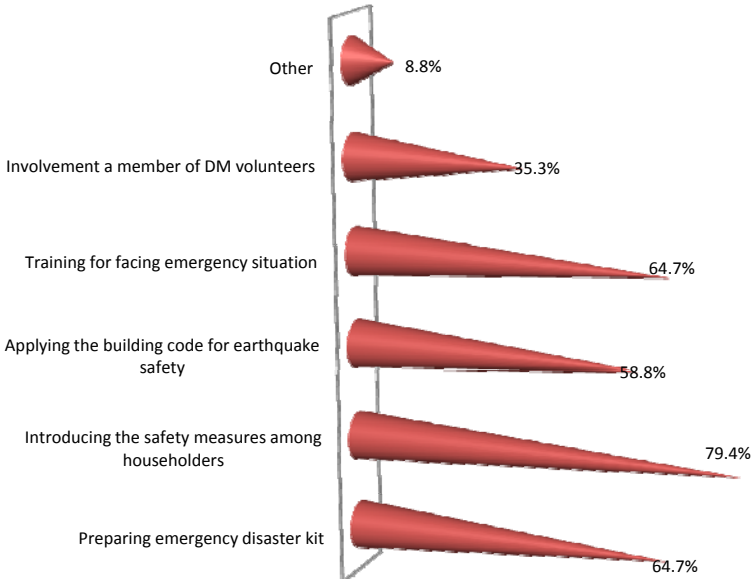
Participation of disaster drills

Once Twice More times No any one



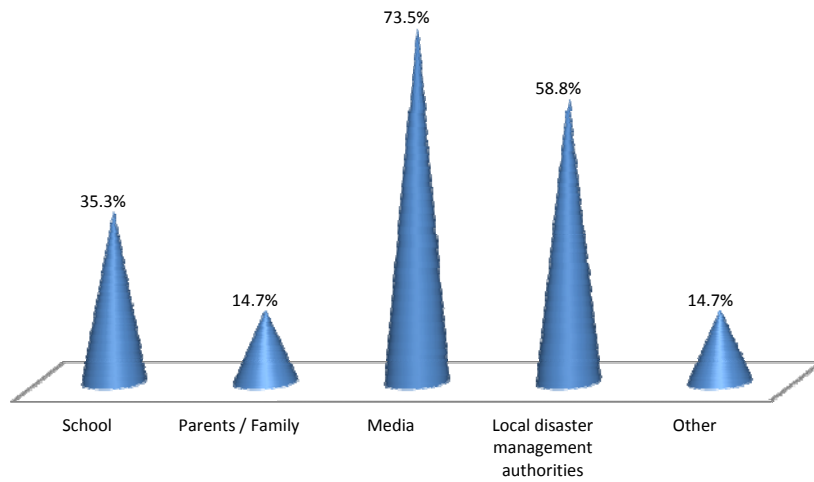
Preparedness Planning activities in Pre-disaster stage

## Pre-disaster stage activities



### People's learning methods

## Ways of gaining disaster education on response

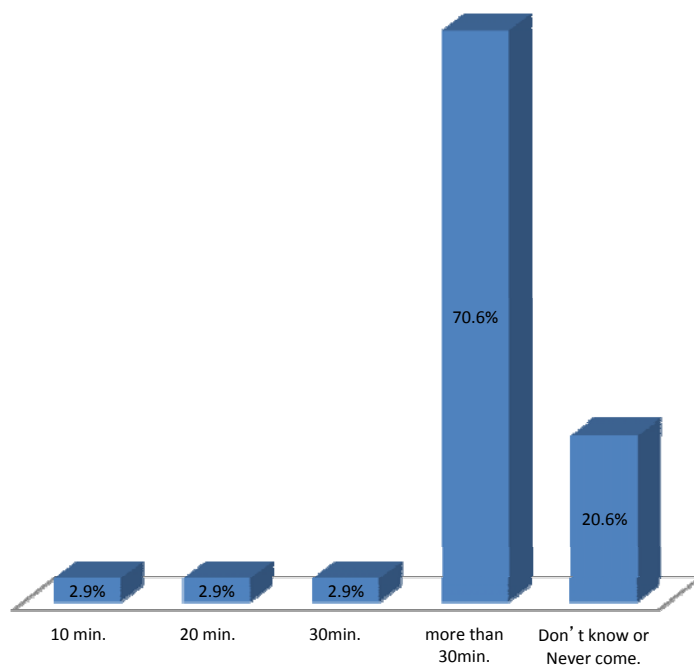


### Tsunami hitting time

## People's Knowledge on Tsunami hit time

71% people have appropriate answer for this question

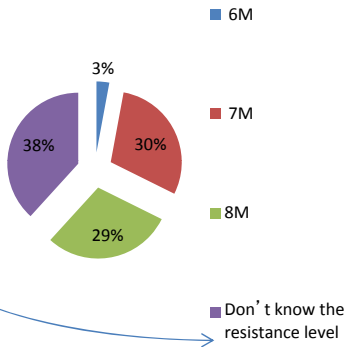
Don't know people are also considerable number and should be given the awareness



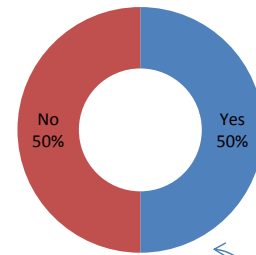
## Resistant level of People's house for seismic intensity

38% people don't have idea on their houses' EQ resistant level

Resistant level of houses



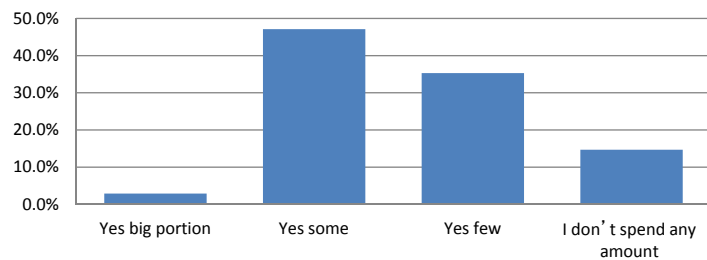
Earthquake safety measures taken



Either they were aware or not, 50% people have confidence on their houses' strength

## Investment willing to the safety of their houses and expected incentives for retrofitting the houses

people's willingness of investment for the safety of their houses



Retrofitting of houses

People expect

Only

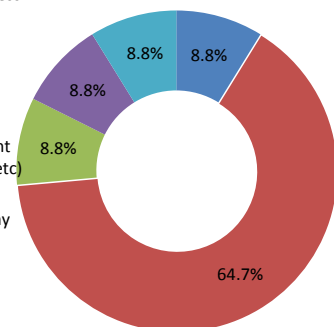
■ Consultancy for earthquake preparedness

■ Financial assistant for retrofitting

■ Easy long schemes (For Eg easy payment methods, low interest or interest free.etc)

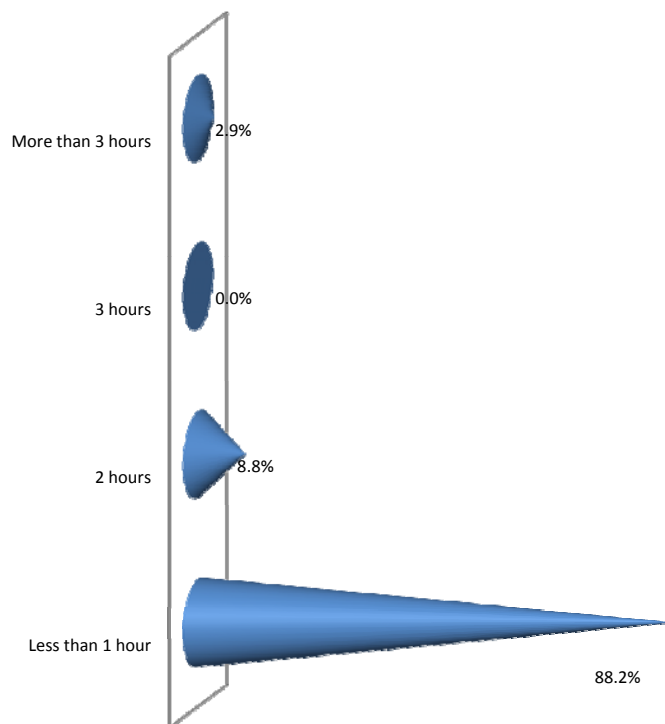
■ I am sure, my house is resistance for any earthquake therefore I don't need any incentives

■ Other



The time people prefer to spend for the disaster preparedness works

Per week hours willing to pay for DRM works

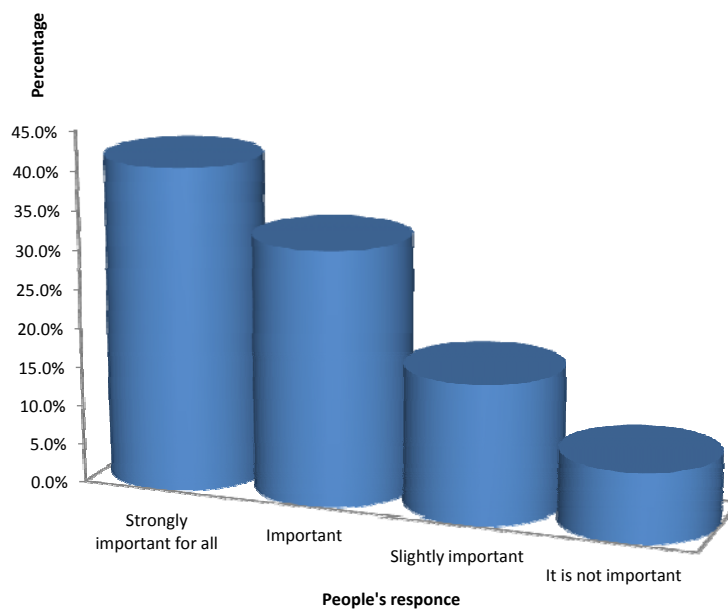


### Usage of social media for information sharing

Many people have ideas that social media are very important for disaster information sharing



### Social media



# Identified Best Practices in the Hyogo Prefectural DM system

- Establishment and Operation of 24-hour
- Hyogo Satellite Communication
- Video Phone System
- Helicopter video transmission system
- Continues Practice of drills
- Developing the websites
- Preparation of multi-purpose Miki Disaster Management
- Introduction of building codes



## Cont..

- **Kobe city Education support program** Kobe city Board of Education and KCFB (Which supports Bokumi) jointly developed a series of disaster prevention education program which can be used at schools
- **Town Watching** better understanding of the surrounding environment and prevents adverse effect of the disasters, 2 times per month
- **Museum very knowledgeable**
- **Community Emergency Drill program** Community, School, and other higher education institutes
- **Miki Earthquake Disaster Management Park**

# Recommendation

- Continuous disaster awareness and preparedness activities
- Reinvestigation is needed for identifying liquefaction impact of evacuation building and others strengths and scientific solution.
- A better insurance scheme for all people could be achievable
- Revision on retrofitting building codes in Hyogo prefecture is recommended
- proper attention and specific program for the aged people on disaster preparedness and emergency evacuation to minimize the damage by future calamities.

## Cont...

- Awareness program campaign for educating people on emergency response, Frequently practices are needed them for learn how to behave, Disaster drill for all
- Join DRM program combining with children and parents
- More incentives for BOKUMI volunteers for keeping them active
- Promotion of CBDRM program

## Identified best practices hope to be implemented in Sri Lanka

- Emergency Management Drills with large scale
- Hope to be strengthened the political interference for DRM
- Proposed to disaster risk reduction for all local level development projects
- Strengthen relationship in between academia and DM institutions and the academia's involvement for disaster risk reduction projects and
- Academia representation for National council as well as district level disaster management coordination meeting

## I offer my sincere thanks

- Executive Director of ADRC
- All the Senior Researchers
- Researchers
- Administrative staff
- And supporting staff
- Finally Japanese Government
- And all who helped us to success this VR program

**Thank You for attention**