

Welcome to My Final Presentation



Lessons learned from Japanese Disaster Management System and My Action Plan

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GOVERNMENT OF THE REPUBLIC OF ARMENIA

Outline of Presentation

1. Impact and Characteristics on World's Natural Disasters.
2. Major Hazards and Disasters in Armenia.
3. Recent Specific topics that Armenia is working on now.
4. Lessons learned from the Japanese Disaster Management System. Experience which can be applied for Disaster Management in Armenia.
5. My Action Plan.
6. Conclusion.

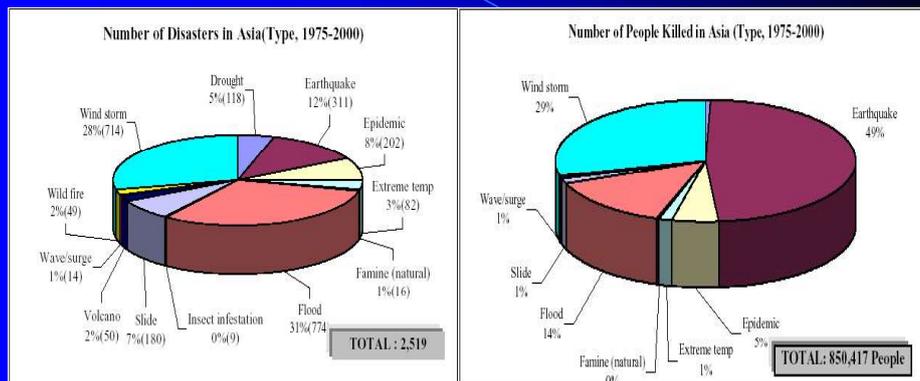


Impact on Natural Disasters

Summary of Natural Disasters(1991-2000)				
	Number of Disasters Occurred	Number of Killed	Number of Totally Affected People	Amount of Damage (1,000 US\$)
World	2,961	754,026	2,116,593,188	687,020,090
Asia	1,137 (38.4%)	588,654 (78.1%)	1,888,686,026 (89.2%)	373,893,530 (54.4%)

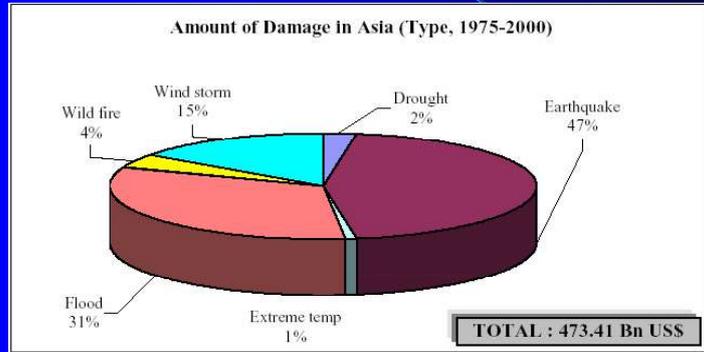
Source: ADRC 20th Century Asian Natural Disasters Data Book <August 2002> Chapter1

Disaster Characteristics in Asia



Source: ADRC 20th Century Asian Natural Disasters Data Book <August 2002> Chapter 2

Disaster Characteristics in Asia



Source: ADRC 20th Century Asian Natural Disasters Data Book <August 2002> Chapter 2

Disasters in Armenia

- **Disasters:** The territory of Armenia is located in high seismic activity zone (Alpine-Himalayan and Balkan-Carpathian seismic belts).

Human losses caused by different types of disasters

Natural disasters:

Earthquakes-94%

Mudslides-3.15%

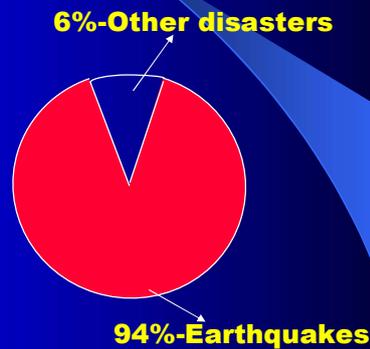
Landslides-1.2%

Floods-0.15%

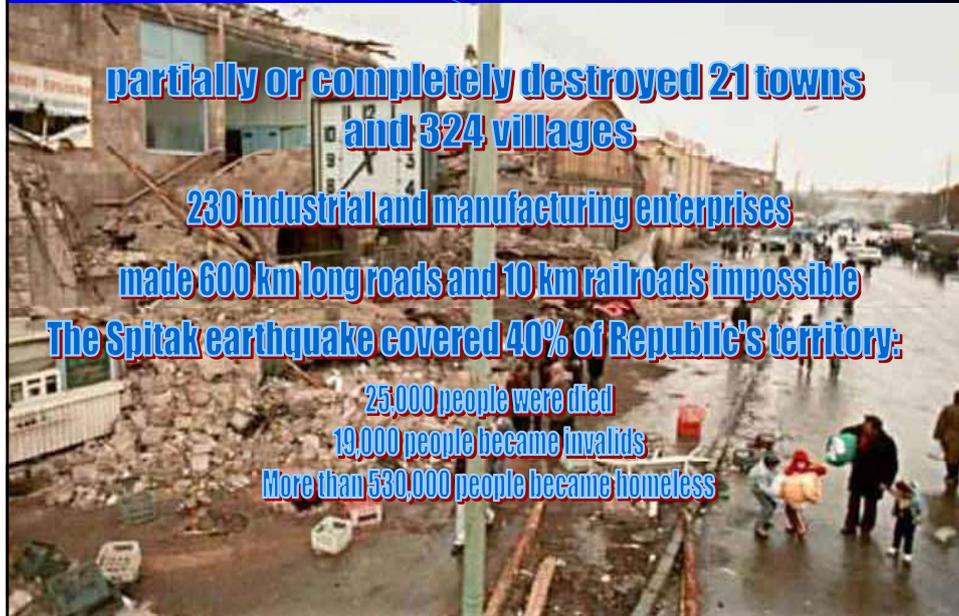
Man-made disasters:

Transport accidents-1.5%

Irradiation-0%



Spitack earthquake and it's damage



Major Disasters Occurred in Armenia

Severest Disasters according to the ratio of Amount of Damage to GDP (Summary 1975-2000)

Country	Dis. Type	Year	GDP Bn.US\$	Affect ed	Tot. Aff.	Dam. US\$	Dam/ GDP
Armenia (Soviet Union)	Earthquake	1988	16.90	1,100,000	1,642,000	20,500,000	1.213
Armenia	Famine (natural)	1992	2.0	1,300,000	1,300,000	4,399	0.0022
Armenia	Flood	1997	9.7	7,000	7,000	8,000	0.00082
Armenia	Drought	2000	10.0	297,000	297,000	100,000	0.01

Source: ADRG, Japan based on CRED-EM-DAT database, 2001, HDI of UNDP, World Bank and World Fact Book, 2001

National Policy for Disaster Management

- The National Survey for Seismic Protection under the Government of the Republic of Armenia was founded on 17th of July in 1991.
- The basic goal of Armenian NSSP is the Seismic Risk Reduction in Armenia.



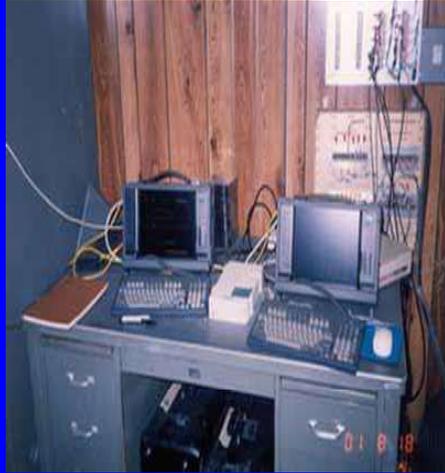
Nowaday functions of Armenian NSSP as an unit and counterpart of EMA of RA and member of the Armenian Association of Seismology and Physics of the Earth Interior (AASPEI).

Resent Specific Topics Related to Seismic Risk Reduction

At present time the following specific topics on Seismic Risk Reduction in Armenia have been developing and implementing:

- Investigation of infrasound as a short-term herald of earthquakes in Armenian NSSP.
- Comprehensive Nuclear-Test-Ban Project under the responsibility of the Armenian NSSP (Involving of the “Garni” Seismic Station into the International Controlling System).
- Works on assessment of vulnerability of the buildings and structures by mutual cooperation of the Armenian NSSP and a number of concerned organizations.
- Interstate scientific technological project for creation of seismological monitoring system on the territories of states-participants of the Commonwealth of Independent States (CIS) is under the development up- to-date by Armenian NSSP.

Investigation of Infrasound As One of the Measures on CSHA



- Infrasound vibration refers to least examined short-term herald category. Since the year 2001 in collaboration with National Oceanic and Atmospheric Administration, USA (NOAA) the station for continuous infrasound monitoring has been designed and is being prepared for installation in Armenian NSSP. The station consists of 4 sensors, 2 computers and device for archiving of collected data.

Vulnerability of Buildings and Structures



- This problem has been approved of in International workshop "Working out the system of interstate seismic risk management and cooperation due to destructive earthquakes on the Caucasus region".
- Following organizations will participate in making decision:
 - National A.S. of RA,
 - Ministry of Urban Planning,
 - Armenian Scientific-Research Institute of Seismology, Earthquake Engineering and Protection of the Buildings,
 - Yerevan State University of Architecture and Construction.

What Did I Learn From Japanese Disaster Management

Great Hanshin-Awaji Earthquake Reconstruction Promotion Center
(Phoenix Plaza)



- In field of Disaster Recovery and Reconstruction:

Great Hanshin-Awaji Earthquake and steps toward Reconstruction from a new flourish perspective.

Hyogo Phoenix Plan:

- ↪ Priority Three-Year Plan.
(Housing, Industry, Infrastructure).
- ↪ Latter Five-Year Promotion Programs.

What Did I Learn From Japanese Disaster Management

Earthquake Disaster Mitigation Research Center



- In field of Emergency Response and Disaster Recovery:

- ↪ Damage Assessment Training System;
- ↪ Temporary Housing and Individual Recovery;
- ↪ Permanent Housing Construction

As an expected result:

➡ New Land Use Planning

What Did I Learn

Earthquake Disaster Mitigation Research Center



- In field of Risk Management including Emergency Response:

- ↪ Gathering damage information.
- ↪ Assessment of seismic vulnerability for urban areas.
- ↪ Development of early earthquake damage assessment system.

As an expected results:

- ➡ Assistance for sharing by disaster-related information.
- ➡ Database for buildings for future improvement of earthquake engineering.

What Did I Learn

Earthquake Disaster Mitigation Research Center



- In field of vulnerability assessment for urban structures:

- ↪ Strong ground motion evaluation (wave generation, wave propagation and soil amplification).
- ↪ Simulation of soil liquefaction and foundation damage.
- ↪ Simulation of structural response and damage.

As an expected result:

- ➡ Effective microzoning maps for seismic design and economic seismic reinforcement methods.

What Did I Learn

3-D full-scale Earthquake Testing Facility



- Vulnerability assessment of buildings and structures:

- World's largest shaking table.
- Mightiest shake power.
- Three-dimensional motions simulator.

As an expected results:

- New more optimal technologies for earthquake engineering.
- Suggestion on new structural schemes for buildings.
- Improving of existing design codes and standards.

Kajima Technical Research Institute



- Kajima Technical Research Institute (KaTRI) has been established as a core-organization of Kajima Corporation.

- Activities:

- Research and Development.
- Technical Cooperation and Consultation.
- Training and Disseminating of Information.

*KaTRI is a Reliable Technologies
Latest Achievements and
Flourish Future*

Major Research and Activities of KaTRI



Large-scale structural testing and shaking-table laboratory



Wind tunnel Laboratory



Fire-resistance test furnace



Remote control technologies for construction machines



Structural test on seismic retrofit using steel dampers



Numerical simulation of tsunami

Japan International Cooperation Agency (JICA)



- Disaster Management Policy and Countermeasures.
- Activity of Japan Disaster Relief (JDR).
- Other Disaster-related activities.
- JICA storehouses-headquarters in Japan and overseas.

As an expected result:

Working out draft plans and another necessary bases for future possible office of JICA appropriate to Armenian conditions (Delivery of disaster relief supplies).

JICA's Assistance to Earthquake in Armenia in Year 1988



- Two Japanese Disaster Relief Teams consisting of 27 experts were dispatched in Armenia to assess disaster situation in earthquake-affected area in 1988.
- Two basic concepts for seismic-resistant design have been mentioned:
 - Only minor damage without significant loss of economy is allowable under moderate earthquakes;
 - Severe damage or collapse followed by loss of human life should be prevented under severe earthquakes.
- Agreement between Government of the Republic of Armenia and Japanese Government on seismic protection of the population on 25th of December in 2001.

What Did I Learn



- **Effective Earthquake Disaster Prevention Policy at State level and Various Disaster Countermeasures.**
- **Early Estimation System (EES) as a basis and effective measure for**
 - **Earthquake Disaster Management Information.**
 - **Prompt Emergency Management**

Disaster Information and Delivery System



PASCO GIS Plaza Co.



Real experiment on taking Video Data of Disaster- affected area by ADRC, NASDA and NTTData Co. in Nagoya area

- PASCO GIS Plaza Co. has developed Earthquake Damage Estimation System (PEDES) for Japanese companies.
- Development of Disaster Information System (DIS) and it's Delivery aims to assess and understand the status of disaster-affected area as well as quickly disseminate the disaster data using IT technology.
- It allows to effectively implement various post-disaster operations (from damage assessment to buildings to disaster relief and people rehabilitation).

Disaster Research and Sustainable Development



Presentation by VR-s, Shizuoka, Fuji Tokoha University

- Fuji Tokoha University in Shizuoka has been established in year 2000 and plays a significant role in sustainable development of the economy in 21st century. The University consists of the two colleges:
 - College of Distribution Economics
 - College of Environmental and Disaster Research
- As an expected result:
 - Involvement of Disaster Research in University curriculum at basic level

National Policy for Disaster Prevention



National Information Center for Earthquakes and Disasters

- National Research Institute for Earth Science and Disaster Prevention (NIED) has been established in year 1963 after a major flood in Nagoya area.
- NIED as an Independent Administrative Institution aims to implement prevention policy of natural disasters with global view of environmental changes.



Laboratory for simulation and controlling of level of rainfall



Seismographs for measuring of earthquakes under the sea

Open House of Institute of Industrial Science University of Tokyo June 6-7, 2002



Structural safety of steel-frame buildings

Experiment with driving of car during an earthquake





22nd International Fire Chiefs' Association of Asia General Conference and Exhibition (IFCAA'02Kyoto)

Outline of the Event.

- Characteristics of natural disasters in XXIst century.
- Rapid growing of population and urbanization increase risk for disasters.
- Fire-fighting, rescue and medical equipment as well as latest computer technologies for disaster simulation as an important tool for disaster preparedness, prevention and response due to raising number of both natural and human-made disasters in XXIst century.

Toward Total Disaster Risk Management (TDRM) Approach

● **Basic Concepts:**

- Disasters are human-made while hazards can be divided into natural, technological and miscellaneous one.
- Importance of Disaster Risk Management on Community level.
- TDRM as a philosophy and framework.

The 1995 Great Hanshin-Awaji Earthquake and Nojima Fault Preservation Museum

Nojima fault is an important scientific message preserved as a valuable human resource



- Nojima fault preservation museum has been established after Great Hanshin-Awaji Earthquake in year 1998.
- Nojima Fault Preservation Museum aims to show the consequences and lessons learned from the earthquake as well as to better understand mechanism of occurrence of the earthquakes for future promotion to earthquake disaster prevention.

My Action Plan

- Contribution for the establishment of the Memorial Center for Spitak Earthquake and considering the 7th of December as a “Earthquake Disaster Prevention Day.”
- Suggestion on “Seismic Risk Management for Buildings based on minimum expected life-cycle cost”.
- Reconsidering and activating of Prompt Response Teams’ actions on level of the Regional Departments.
- Disaster Information System (DIS) and it’s Delivery using GIS and IT technologies.
- Project Proposal Cooperation between Armenian NSSP and ADRC-”The Earthquake Fast Damage Estimation System for Seismic Risk Reduction”.
- Suggestion on involving of the Disaster and Environmental Research in the educational program for Universities in Armenia at State level.
- TDRM approach as a prevention and mitigation measure at Basic level.

Memorazible Visits and Sightseeing Places in Japan

- Nikko city (shrines, temples and waterfalls)
- Zoo in Oji-Dzu Park
- Suma Aquarium
- Kobe Port Tower
- Jazz-Festival in Mosaic
- Rokko and Maya mountains
- Kabuki-Chuo in Tokyo
- Hiroshima Peace Memorial Museum and Miyajima island
- Traditional Bon-Odori Festival
- Firework Festival in Kobe Harbor Land
- Akashi Kaikyo Bridge
- Hana-Sajiki (flowers garden in Awaji island)

Conclusions

1. Strong earthquakes can not be stopped, but can be reduced by setting up and implementing appropriate and effective disaster management policy.
2. We should solve the problem regarding the objective data on seismic hazard and making decision which would be adequated to such hazard.
3. Considering of the ADRC as a core-organization responsible for disaster risk management in Asian region and as the future pattern – organization for disaster risk reduction policy over the world.
4. In XXIst century the strategy for seismic risk reduction should be based on prioritizing preparedness over the recovery.

