

**International Cooperation
for Natural Disaster Mitigation
By Science and Engineering Societies of Japan,
and The Asian Disaster Reduction Center**

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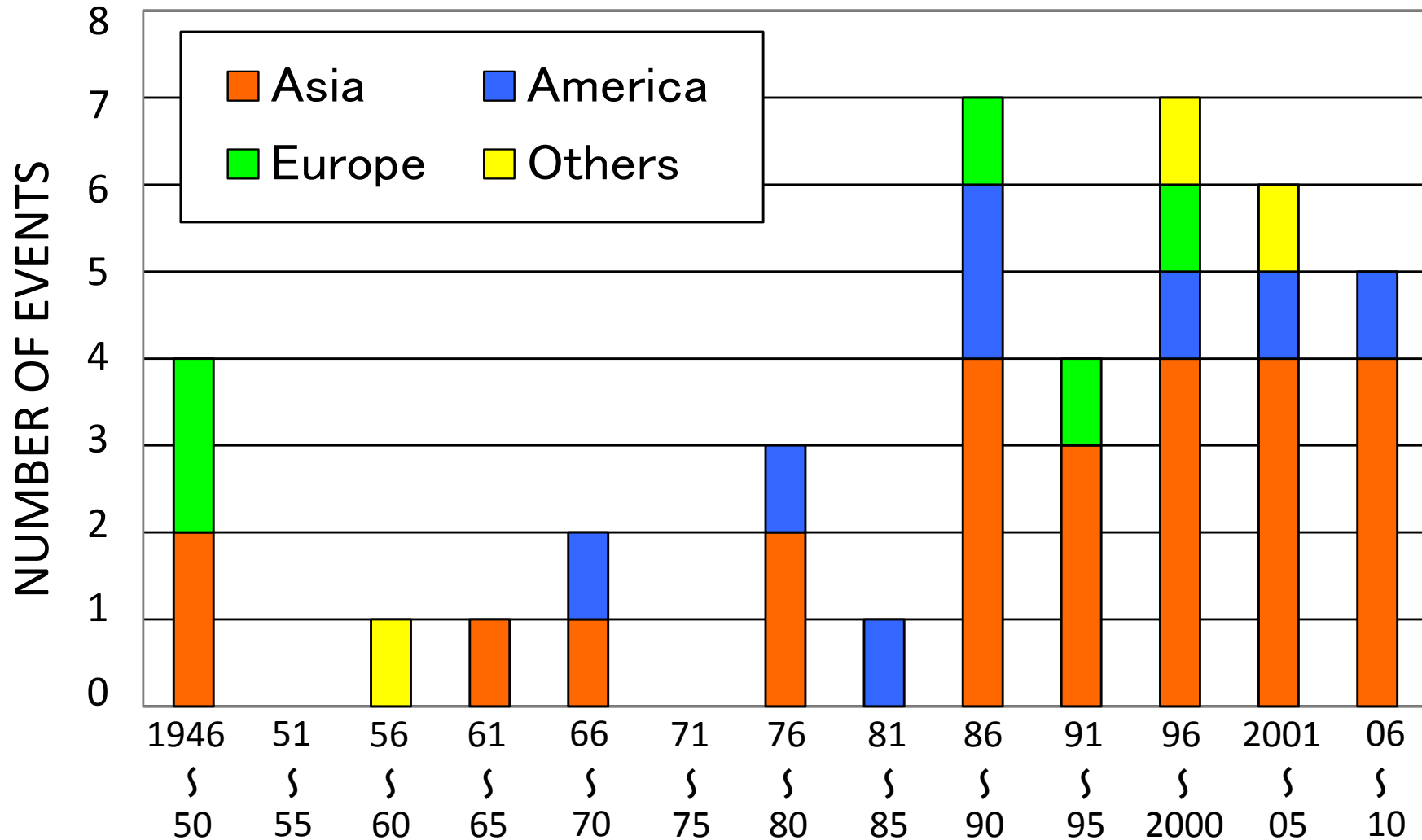
**Tokyo Conference on International Study
For Disaster Risk Reduction and Resilience**

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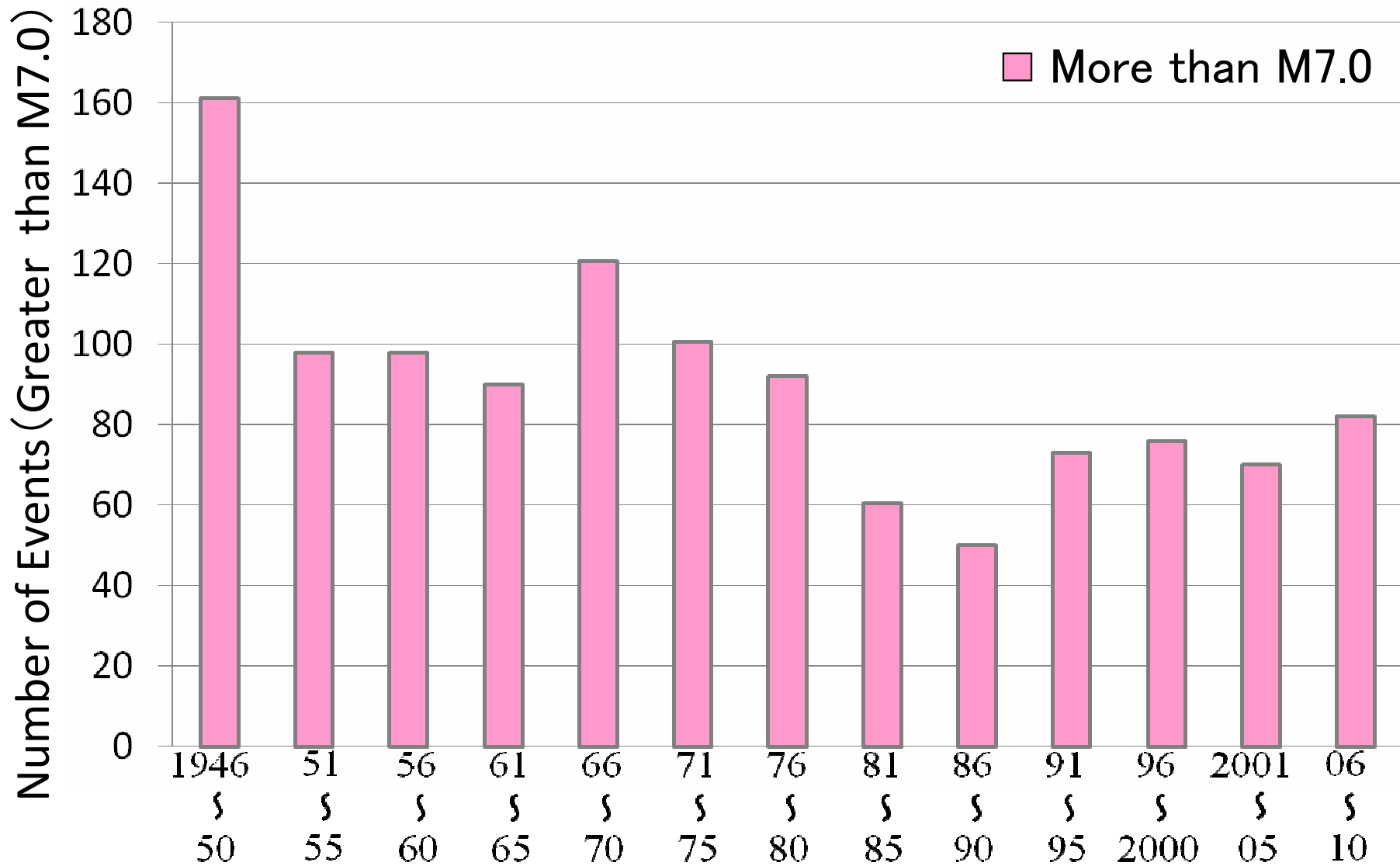
1. Rapid Increase of Natural Disasters in Asia
2. International Cooperation for Disaster Mitigation and Recovery by Science and Engineering Societies of Japan, and Asian Disaster Reduction Center
3. Recommendations from the Science Council of Japan on International Cooperation for Natural Disaster Mitigation

1. Rapid Increase of Natural Disasters in Asia

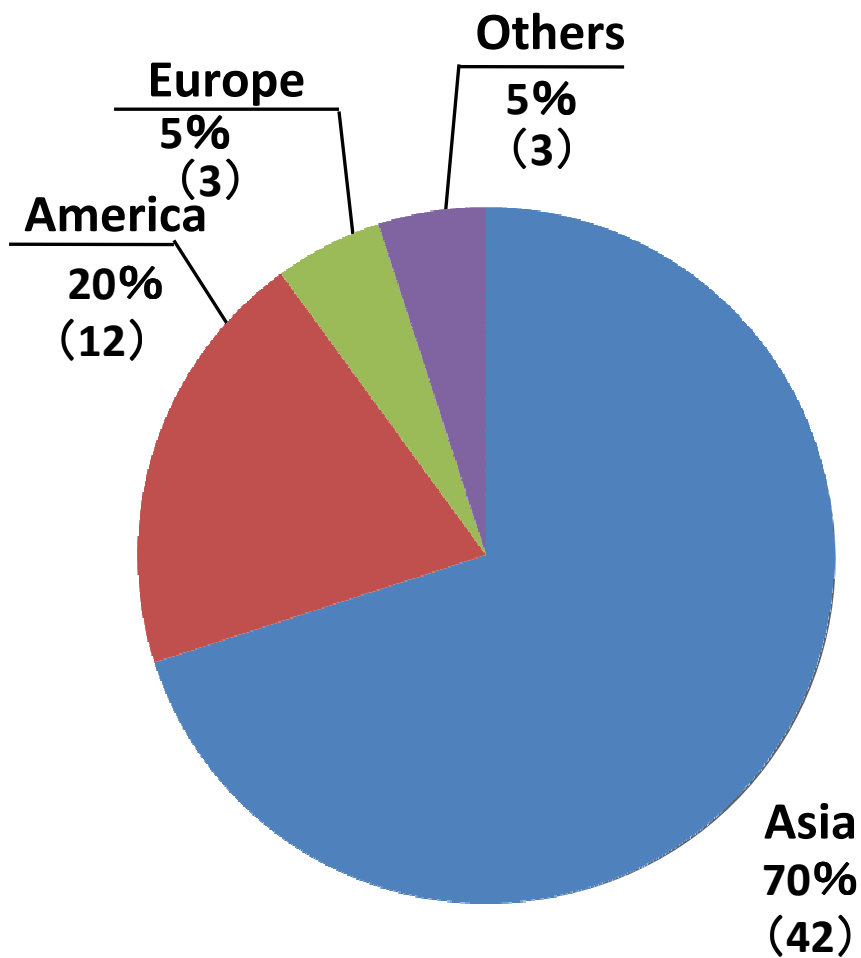
Numbers and Areas of Earthquakes and Tsunami Disasters(1946~2010)
(Disasters with over 1,000 dead and missing)



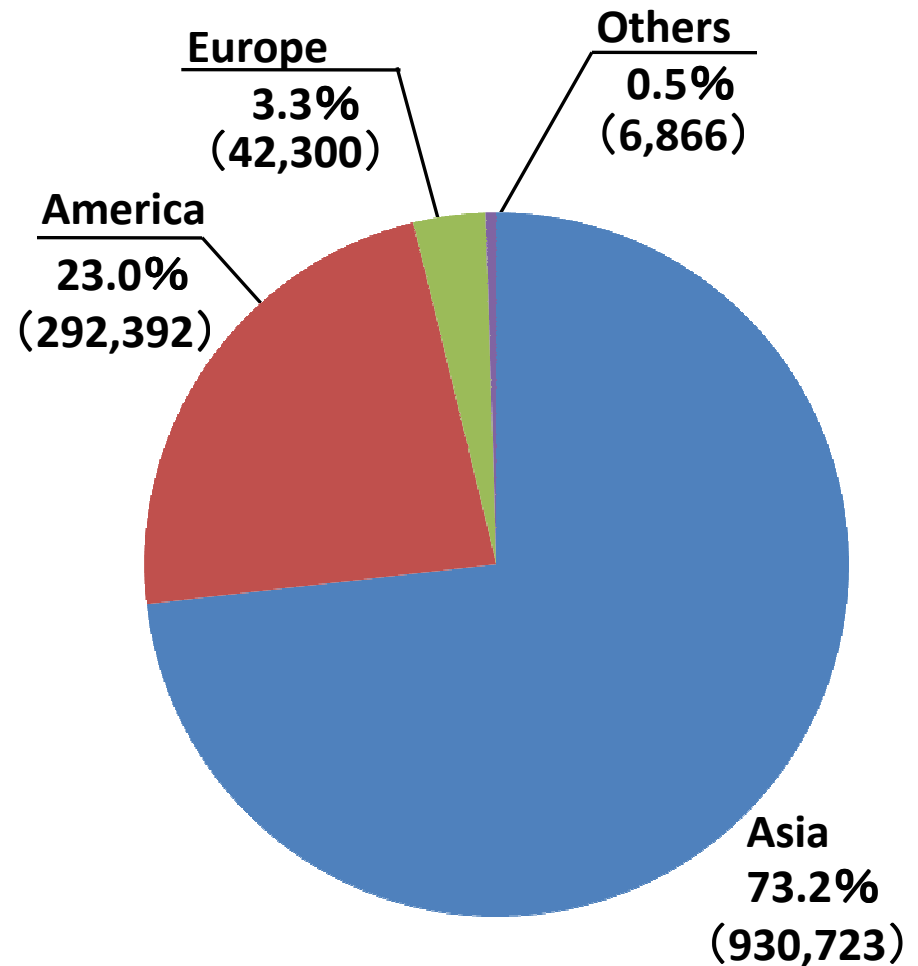
Total Number of Earthquakes with Moment Magnitudes Greater Than 7.0(1946~2010)



Regional Ratios of Natural Disasters, and Dead and Missing (1986~2011) (Disasters with more than 1,000 dead and missing)



Number of occurrences of natural disasters : 60



Dead and Missing: 1,272,281

Increase of Natural Hazards due to Change of Natural Environments and Social Circumstances

Change of Natural Environment

- Global Warming
- Heat Island of Urbanized Area
- Deforestation
- Desertification
- Erosion of River Bank and Seashore

Increase of hazards due to natural environment

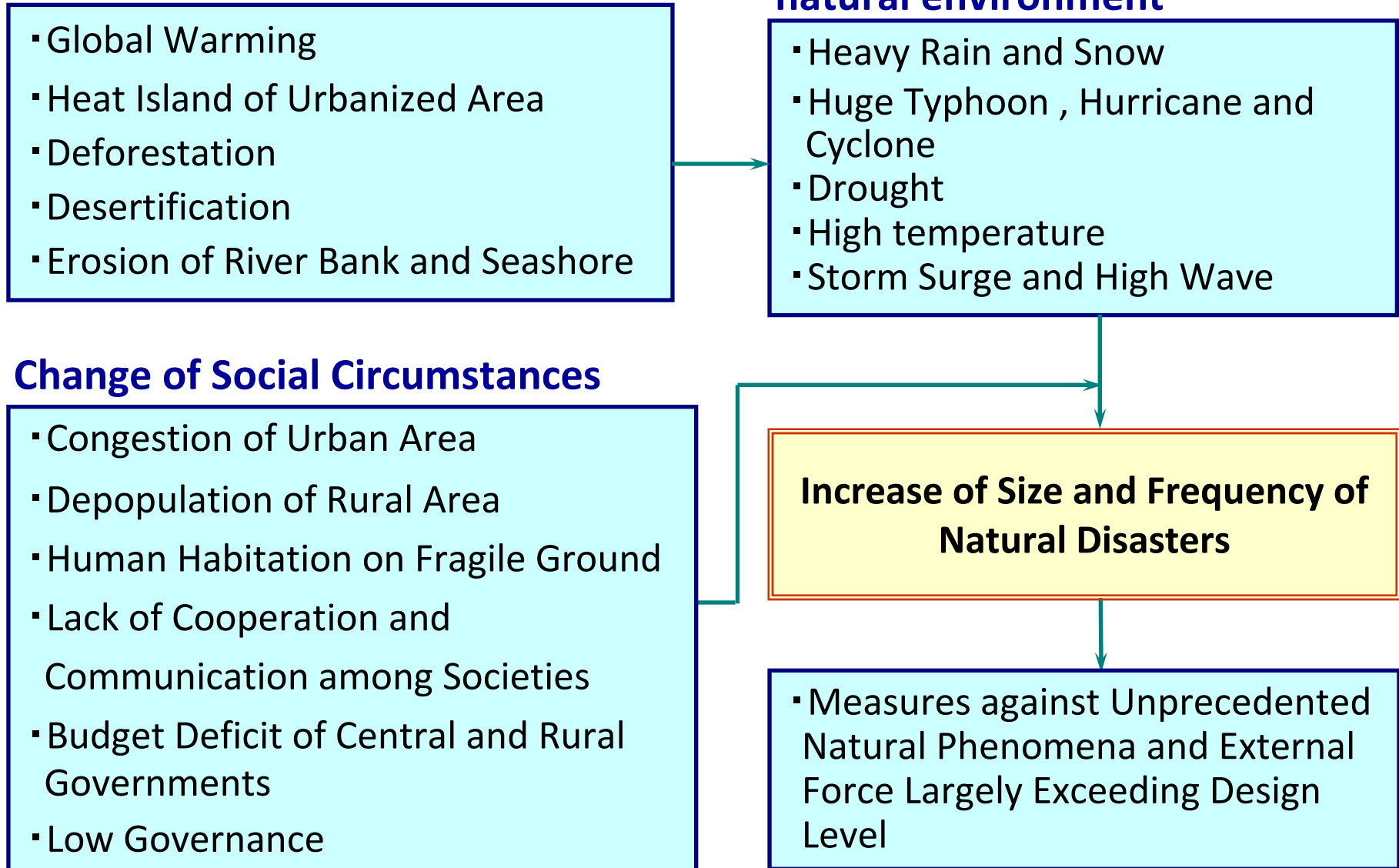
- Heavy Rain and Snow
- Huge Typhoon , Hurricane and Cyclone
- Drought
- High temperature
- Storm Surge and High Wave

Change of Social Circumstances

- Congestion of Urban Area
- Depopulation of Rural Area
- Human Habitation on Fragile Ground
- Lack of Cooperation and Communication among Societies
- Budget Deficit of Central and Rural Governments
- Low Governance

Increase of Size and Frequency of Natural Disasters

- Measures against Unprecedented Natural Phenomena and External Force Largely Exceeding Design Level



2. International Cooperation for Disaster Mitigation by Science and Engineering Societies, and Asian Disaster Reduction Center

Japan Society of Civil Engineers (1)

2004 Sumatra Earthquake and Tsunami

7



Survey on the west coast road of the Northern Sumatra



Roads along the coast were washed away and largely subsided

2005 Nias Island Earthquake



A bridge damaged by soil liquefaction (March 28, 2005)



Training of local engineers on soil survey

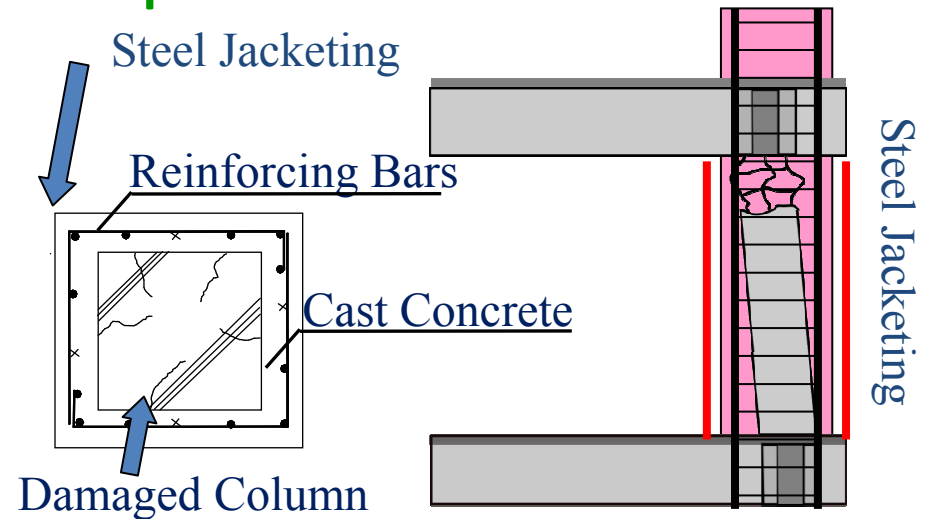
International Cooperation for Disaster Mitigation by Science and Engineering Societies, and Asian Disaster Reduction Center

Japan Society of Civil Engineers (2)

2008 Wenchuan Earthquake in China



Partially damaged concrete building



Proposed restoration method of the building



Fallen concrete girder of a bridge



Discussions with Chinese engineers for restoration of the bridge

Engineers Without Borders, Japan (EWB,J) (Non-Profit Organization)



Public Sectors
▪ Ministries of Foreign Affairs, etc.
▪ JICA and others

Support

Support

Japan Society of Civil Engineers

Architectural Institute of Japan

**NPO
Engineers Without Borders, Japan**

Support

Senior volunteer Engineers

Private Sectors
▪ Construction Companies
▪ Construction Consultants

- (1) Technical Supports for Restoration and Reconstruction to the Affected Area
- (2) Education on Natural Disaster Mitigation
- (3) Transfer of Technologies and Knowledge for Natural Disaster Mitigation

Education for Natural Disaster Mitigation

Engineers without Borders, Japan and It's Student Members



Disaster Education of Children (Banda Aceh)



Cooperation among Japanese and Indonesian Students



Monument of the Tsunami Inundation Height



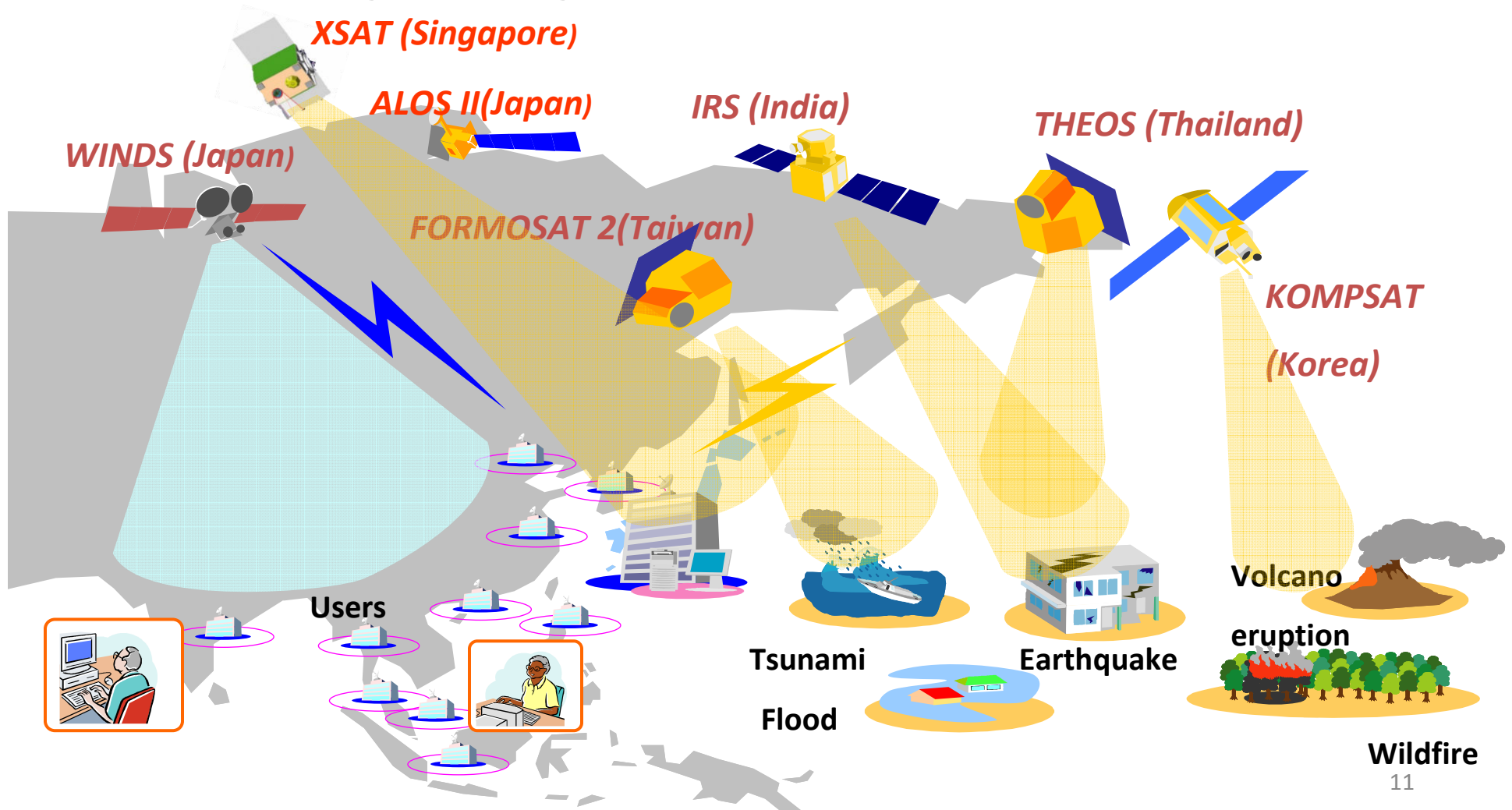
Description of The Tsunami Disaster

International Cooperation for Natural Disaster Mitigation ¹¹

Asian Disaster Reduction Center

Sentinel Asia

The framework of collaboration between space agencies and disaster management agencies



3. Recommendations from the Science Council of Japan for Natural Disaster Mitigation

- (1) Policies for Natural Disaster Reduction under Global Increase of Disasters (to the Government of Japan)**
 - Paradigm change
 - Stable and long-term tax spending
 - Reforms of land-use
 - reinforcement of infrastructures
 - Creation of disaster-awareness society
 - Encouragement of NPO and NGO
 - International cooperation
- (2) Organizations of Common Platforms for Natural Disaster Reduction**
 - Disaster reduction and recovery
 - Development of human resources
 - International programs
 - International researches
- (3) Multidisciplinary Joint Action for Natural Disaster Mitigation**
 - Science
 - Engineering
 - Cultural and Social Science
 - Information Technology
 - Medical Science

Recommendation on Multidisciplinary Joint Action¹³ for Natural Disaster Mitigation by Science Council of Japan

Science

(Seismology, Earth Science, etc.)

- Watching of Natural Phenomena
- Study on Natural Hazard Mechanism
- Prediction of Natural Hazard

Engineering

(Civil, Architecture, Mechanics,
Geo technology, Urban Planning, etc)

- Hazard-Resistance of Infrastructures and Industrial Facilities
- Quick Recovery and Reconstruction
- Hazard-Resistant Plan of Nation and Community

Information Technology

(Wording, Broadcasting, Disaster Information, etc.)

- Collection and Transmission of Damage Information
- Creation of Disaster Data Base
- Development of Warning and Evacuation System

Cultural and Social Science

(Sociology, Economics, Politics, Law, etc.)

- Study on Social Impact of Natural Hazards
- Evaluation of Risk and Measure for Reduction
- Development of Resilient Social System

Medical Science

- Rescue Operation
- Emergency Medical Treatment
- Long-Term Health Care