HFA IRIDeS Review Report
Focusing on 2011 Great East Japan Earthquake

International Strategy for Disaster Mitigation Research Field
International Research Institute of Disaster Science (IRIDeS)
Tohoku University, Japan

Osamu MURAO

Vulnerability: Wooden House Congested Districts

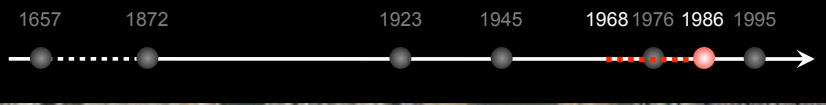
Open Space to Mitigate Fire Spreading (火除地)

Walls to Prevent Fire Spreading

Showa Avenue

4. Providing Modern Apartments (Doujunkai)

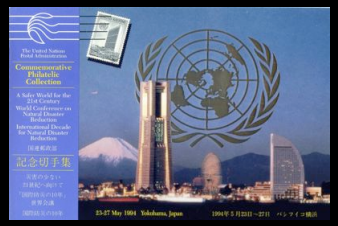
Shirahige Disaster Prevention Base (Tokyo)



International Decade for Natural Disaster Reduction (IDNDR)

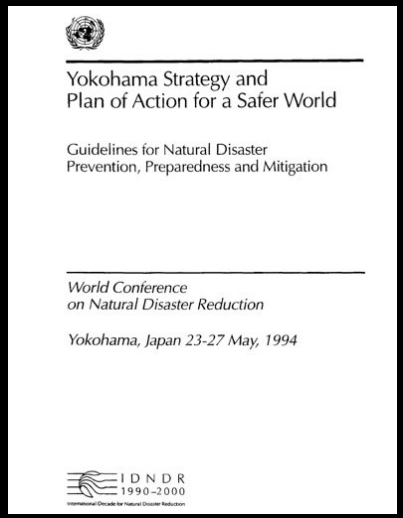
International Decade for Natural Disaster Reduction
IDNDR
1990–2000
Building a Culture of Prevention

World Conference on Natural Disaster Reduction 1994 Yokohama, Kanagawa, Japan



The UN World Conference on Natural Disaster Reduction which was part of a mid-term review of Decade activities, was held in Yokohama (Japan), 23-27 May 1994. The UN-FAO/ECE/ILO Team of Specialists used the opportunity to express its views on global fire to the IDNDR.

Yokohama Strategy and Plan of Action for a Safer World (1994)


Yokohama Strategy and
Plan of Action for a Safer World

Guidelines for Natural Disaster
Prevention, Preparedness and Mitigation

World Conference
on Natural Disaster Reduction

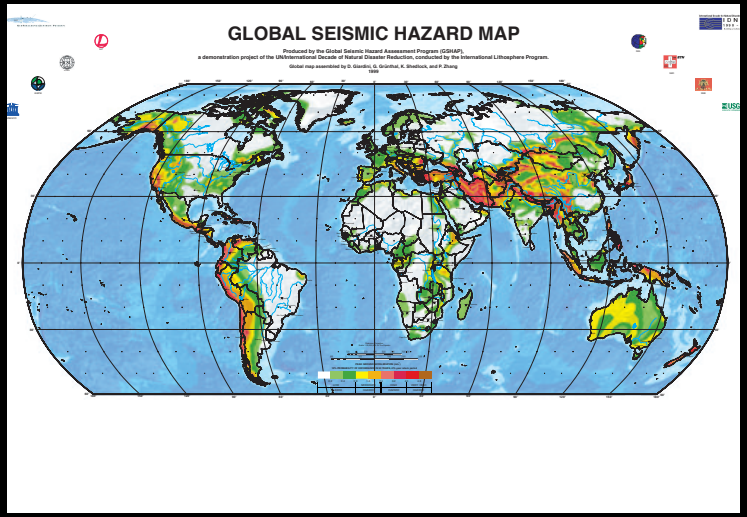
Yokohama, Japan 23-27 May, 1994

IDNDR
1990–2000

Five Main Areas for specific gaps and challenges identified after Yokohama Strategy 1994

a. Governance: organizational, legal and policy frameworks;
b. Risk identification, assessment, monitoring and early warning;
c. Knowledge management and education;
d. Reducing underlying risk factors;
e. Preparedness for effective response and recovery.

Global Seismic Hazard Map (1999)



United Nations International Strategy for Disaster Reduction (UN/ISDR)

UNISDR
The United Nations Office for Disaster Risk Reduction

- UNISDR was created in December 1999 as part of the UN Secretariat with the purpose of ensuring the implementation of the International Strategy for Disaster Reduction.
- The International Strategy for Disaster Reduction reflects a major shift from the traditional emphasis on disaster response to disaster reduction, and in effect seeks to promote a "culture of prevention".

World Conference on Disaster Reduction 2005 Kobe, Hyogo, Japan

World Conference on Disaster Reduction
18-22 January 2005, Kobe, Hyogo, Japan

1995 Great Kobe Earthquake (Hyogo)

HFA

Hyogo Framework for Action 2005-2015:
Building the Resilience of Nations and Communities to Disasters

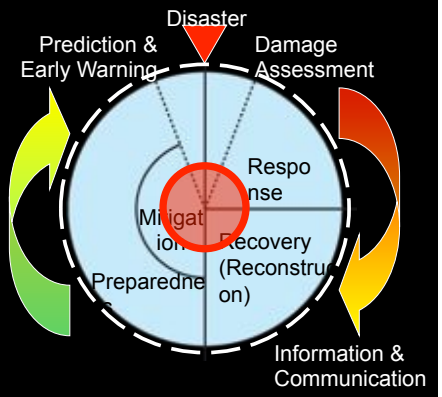
Priorities for Action

HFA

Hyogo Framework for Action 2005-2015:
Building the Resilience of Nations and Communities to Disasters

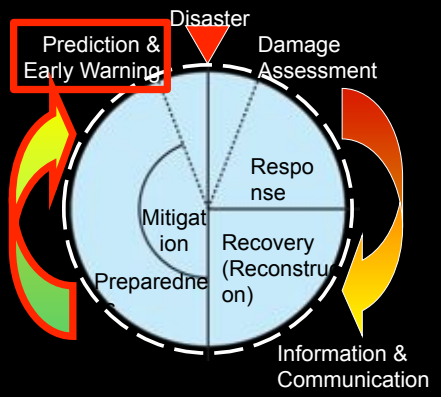
a. Governance: organizational, legal and policy frameworks

- Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.



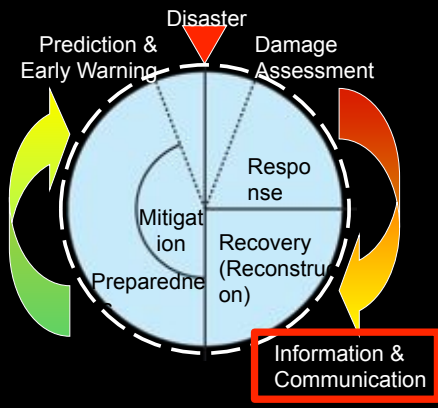
b. Risk identification, assessment, monitoring and early warning

- Identify, assess and monitor disaster risks and enhance early warning.



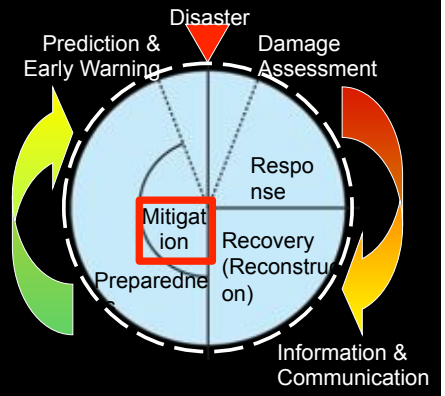
c. Knowledge management and education

- Use knowledge, innovation and education to build a culture of safety and resilience at all levels.



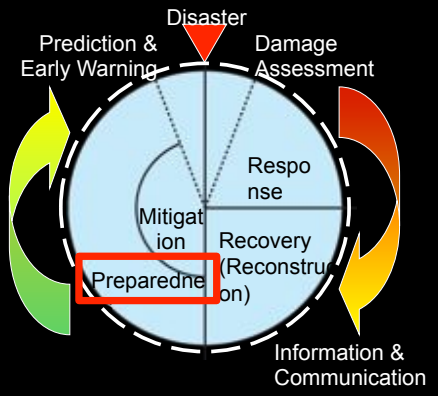
d. Reducing underlying risk factors

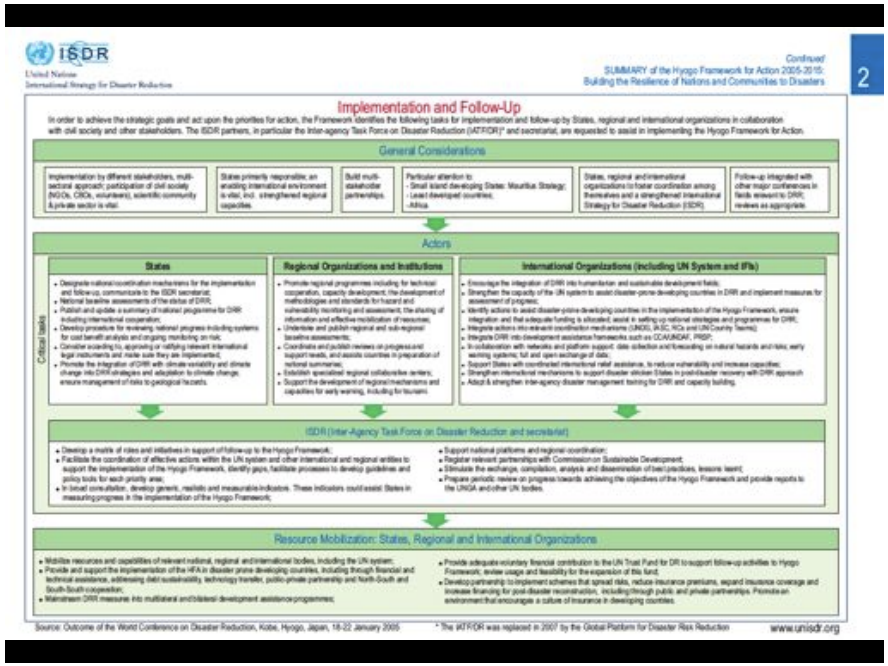
- Reduce the underlying risk factors.



e. Preparedness for effective response and recovery

- Strengthen disaster preparedness for effective response at all levels.





United Nations
International Strategy for Disaster Reduction

Continued
SUMMARY of the Hyogo Framework for Action 2005-2015:
Building the Resilience of Nations and Communities to Disasters

2

Implementation and Follow-Up

In order to achieve the strategic goals and act upon the priorities for action, the Framework identifies the following tasks for implementation and follow-up by States, regional and international organizations in collaboration with civil society and other stakeholders. The ISDR partners, in particular the Inter-agency Task Force on Disaster Reduction (IATF/DR)* and secretariat, are requested to assist in implementing the Hyogo Framework for Action.

General Considerations

- Implementation by different stakeholders, multi-sectoral approach; participation of civil society (NGOs, CBOs, volunteers), scientific community & private sector is vital.
- States primarily responsible; an enabling international environment is vital, incl. strengthened regional capacities.
- Build multi-stakeholder partnerships.
- Particular attention to:
  - Small island developing States: Mauritius Strategy;
  - Least developed countries;
  - Africa.
- States, regional and international organizations to foster coordination among themselves and a strengthened International Strategy for Disaster Reduction (ISDR).
- Follow-up integrated with other major conferences in fields relevant to DRR; reviews as appropriate.

Actors

Critical tasks

States

- Designate national coordination mechanisms for the implementation and follow-up, communicate to the ISDR secretariat;
- National baseline assessments of the status of DRR;
- Publish and update a summary of national programme for DRR including international cooperation;
- Develop procedure for reviewing national progress including systems for cost benefit analysis and ongoing monitoring on risk;
- Consider acceding to, approving or ratifying relevant international legal instruments and make sure they are implemented;
- Promote the integration of DRR with climate variability and climate change into DRR strategies and adaptation to climate change, ensure management of risks to geological hazards.

Regional Organizations and Institutions

- Promote regional programmes including for technical cooperation, capacity development, the development of methodologies and standards for hazard and vulnerability monitoring and assessment, the sharing of information and effective mobilization of resources;
- Undertake and publish regional and sub-regional baseline assessments;
- Coordinate and publish reviews on progress and support needs, and assists countries in preparation of national summaries;
- Establish specialized regional collaborative centers;
- Support the development of regional mechanisms and capacities for early warning, including for tsunami.

International Organizations (including UN System and IFIs)

- Encourage the integration of DRR into humanitarian and sustainable development fields;
- Strengthen the capacity of the UN system to assist disaster-prone developing countries in DRR and implement measures for assessment of progress;
- Identify actions to assist disaster-prone developing countries in the implementation of the Hyogo Framework, ensure integration and that adequate funding is allocated; assist in setting up national strategies and programmes for DRR;
- Integrate actions into relevant coordination mechanisms (UNDG, IASC, RCs and UN Country Teams);
- Integrate DRR into development assistance frameworks such as CCA/UNDAF, PRSP;
- In collaboration with networks and platform support data collection and forecasting on natural hazards and risks; early warning systems; full and open exchange of data.
- Support States with coordinated international relief assistance, to reduce vulnerability and increase capacities;
- Strengthen international mechanisms to support disaster-stricken States in post-disaster recovery with DRR approach
- Adopt & strengthen inter-agency disaster management training for DRR and capacity building.

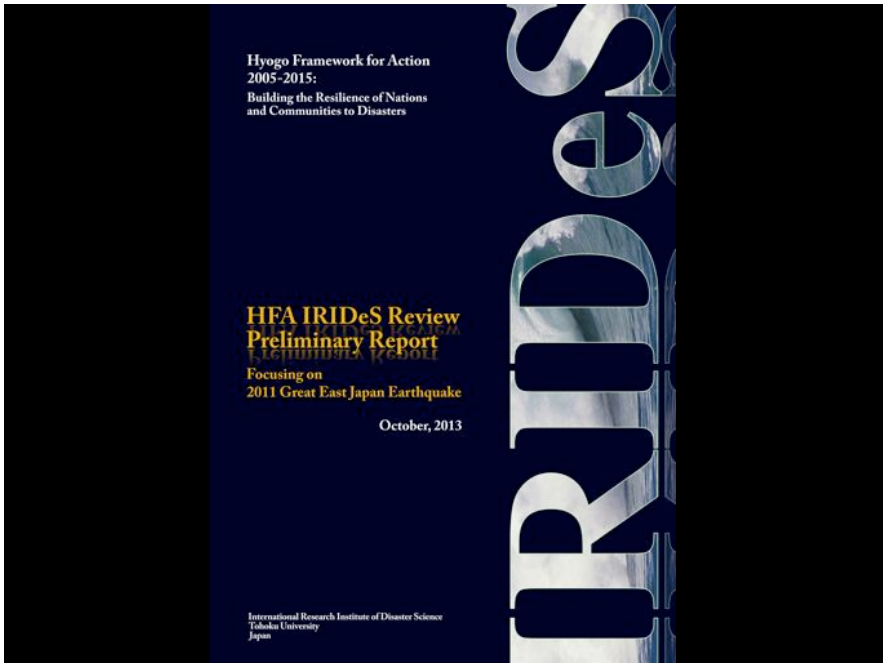
ISDR (Inter-Agency Task Force on Disaster Reduction and secretariat)

- Develop a matrix of roles and initiatives in support of follow-up to the Hyogo Framework;
- Facilitate the coordination of effective actions within the UN system and other international and regional entities to support the implementation of the Hyogo Framework, identify gaps, facilitate processes to develop guidelines and policy tools for each priority area;
- In broad consultation, develop generic, realistic and measurable indicators. These indicators could assist States in measuring progress in the implementation of the Hyogo Framework;
- Support national platforms and regional coordination;
- Register relevant partnerships with Commission on Sustainable Development;
- Stimulate the exchange, compilation, analysis and dissemination of best practices, lessons learnt;
- Prepare periodic review on progress towards achieving the objectives of the Hyogo Framework and provide reports to the UNGA and other UN bodies.

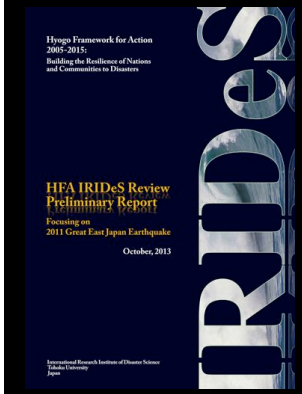
Resource Mobilization: States, Regional and International Organizations

- Mobilize resources and capabilities of relevant national, regional and international bodies, including the UN system;
- Provide and support the implementation of the HFA in disaster prone developing countries, including through financial and technical assistance, addressing debt sustainability, technology transfer, public-private partnership and North-South and South-South cooperation;
- Mainstream DRR measures into multilateral and bilateral development assistance programmes;
- Provide adequate voluntary financial contribution to the UN Trust Fund for DR to support follow-up activities to Hyogo Framework; review usage and feasibility for the expansion of this fund;
- Develop partnership to implement schemes that spread risks, reduce insurance premiums, expand insurance coverage and increase financing for post-disaster reconstruction, including through public and private partnerships. Promote an environment that encourages a culture of insurance in developing countries.

Source: Outcome of the World Conference on Disaster Reduction, Kobe, Hyogo, Japan, 18-22 January 2005 * The IATF/DR was replaced in 2007 by the Global Platform for Disaster Risk Reduction www.unisdr.org



Series of HFA IRIDeS Review Report



Preliminary Version
Oct. 2010

Complete Version
May 2011

Japanese Version
June 2011

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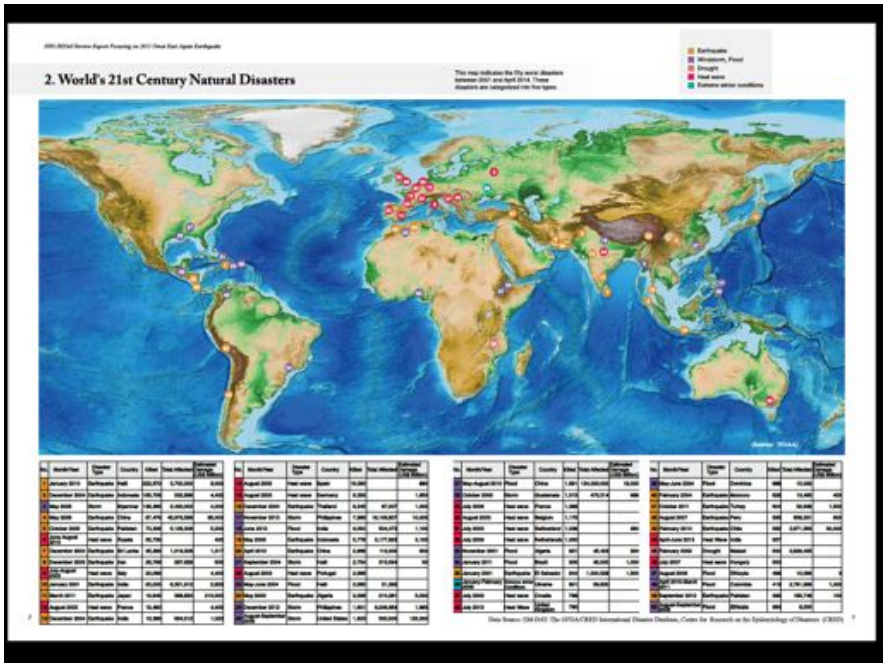
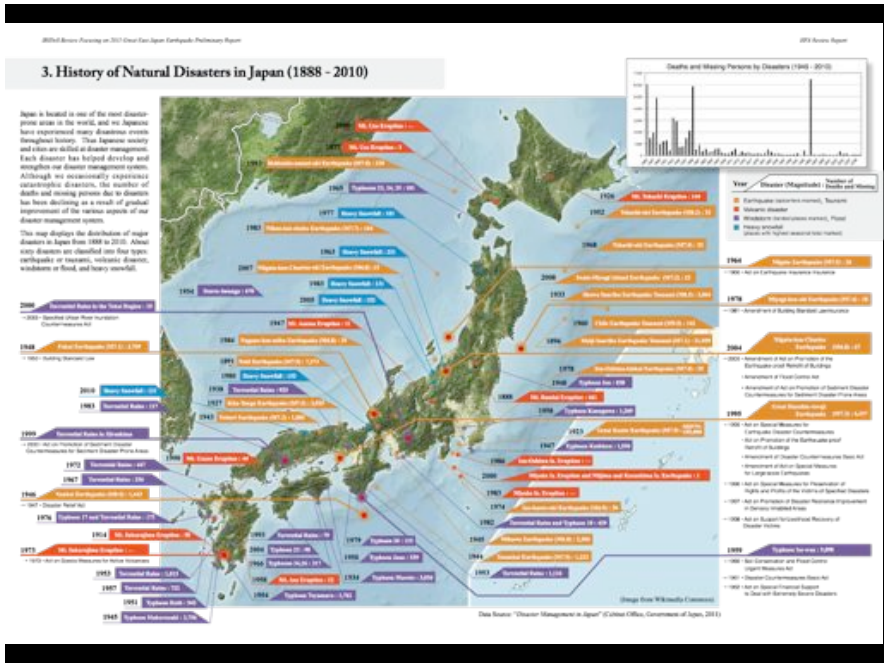
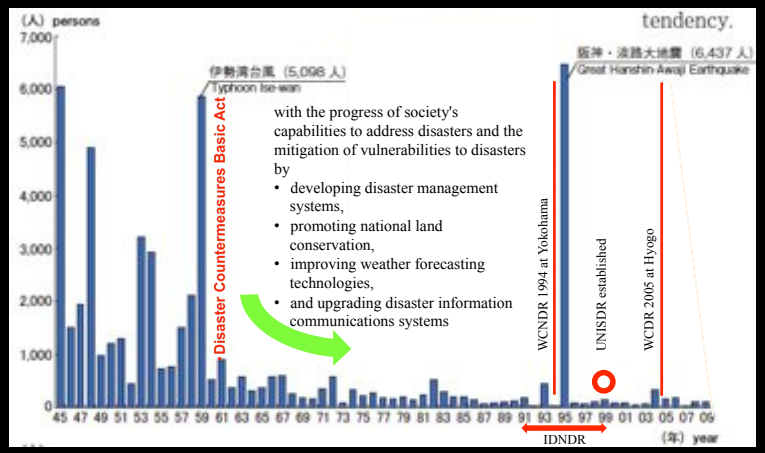
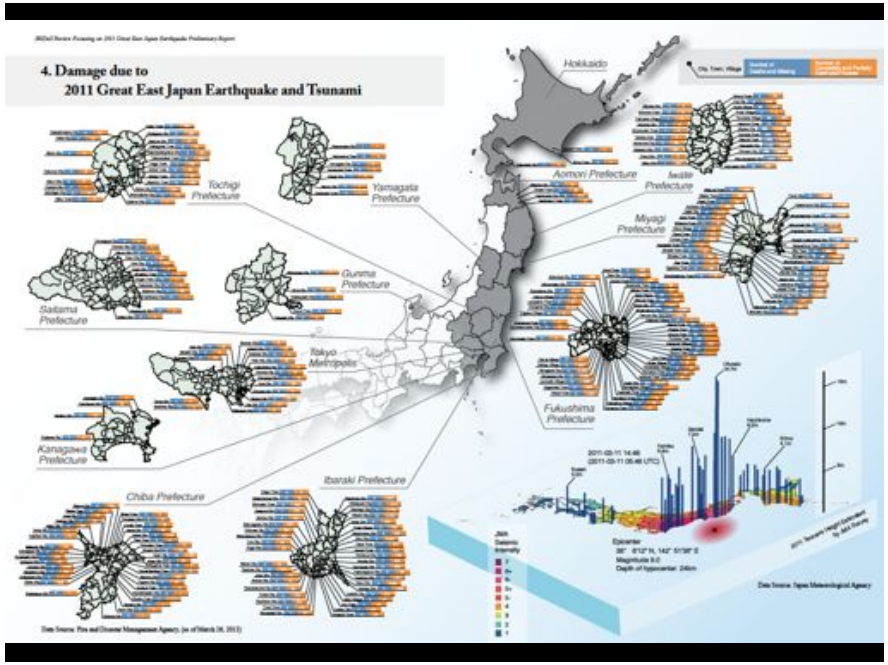


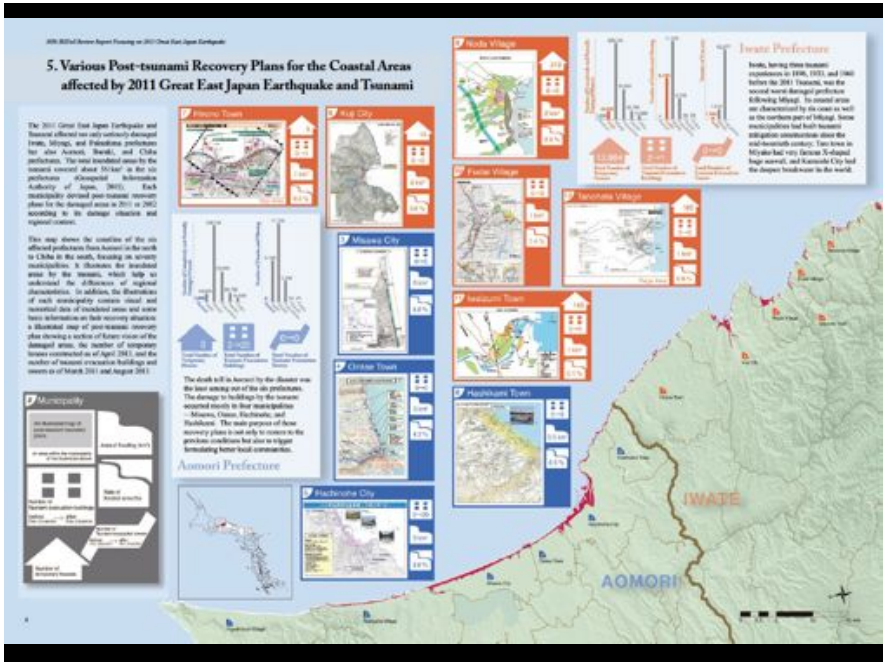


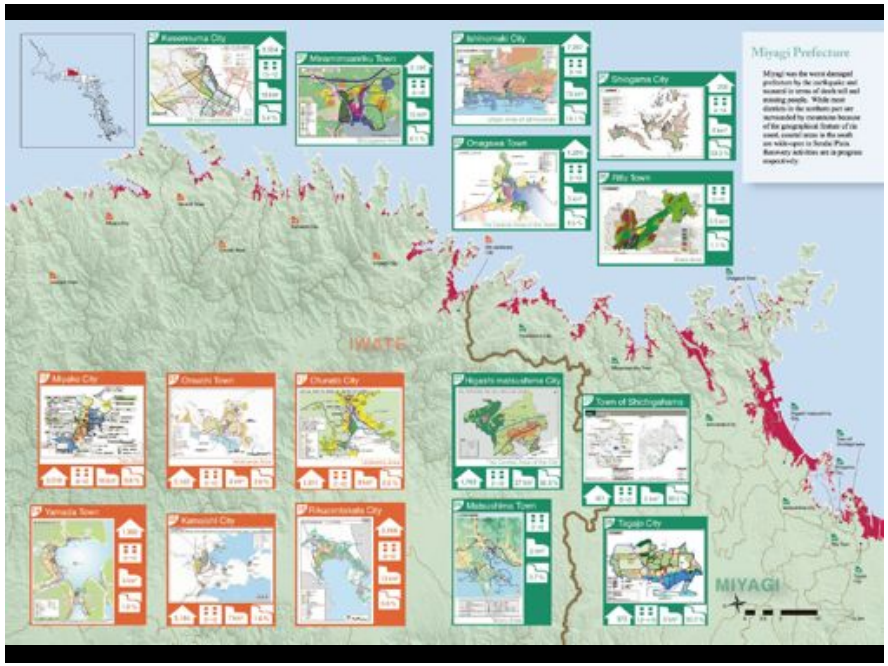
The Number of Deaths and Missing Persons in Disasters

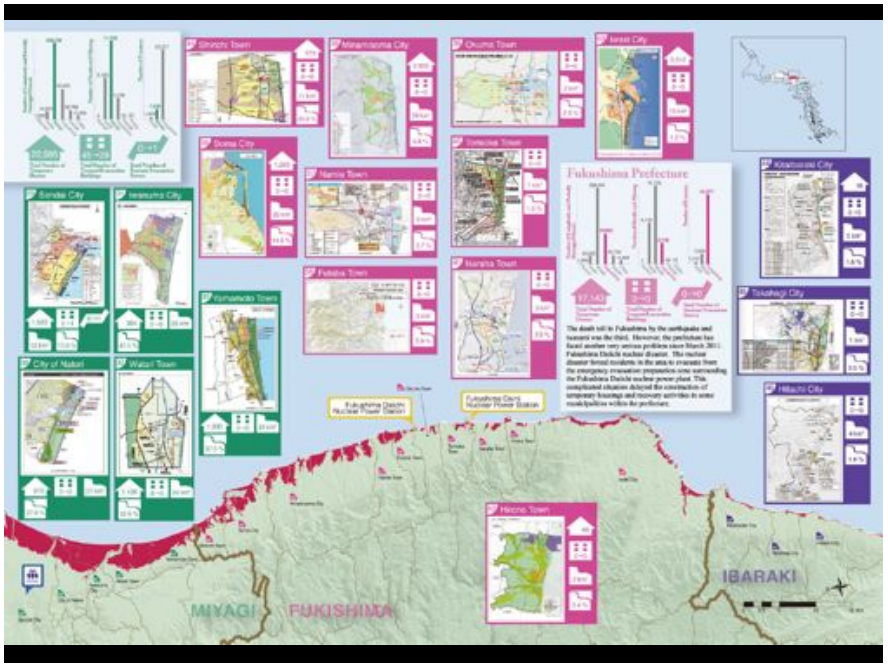


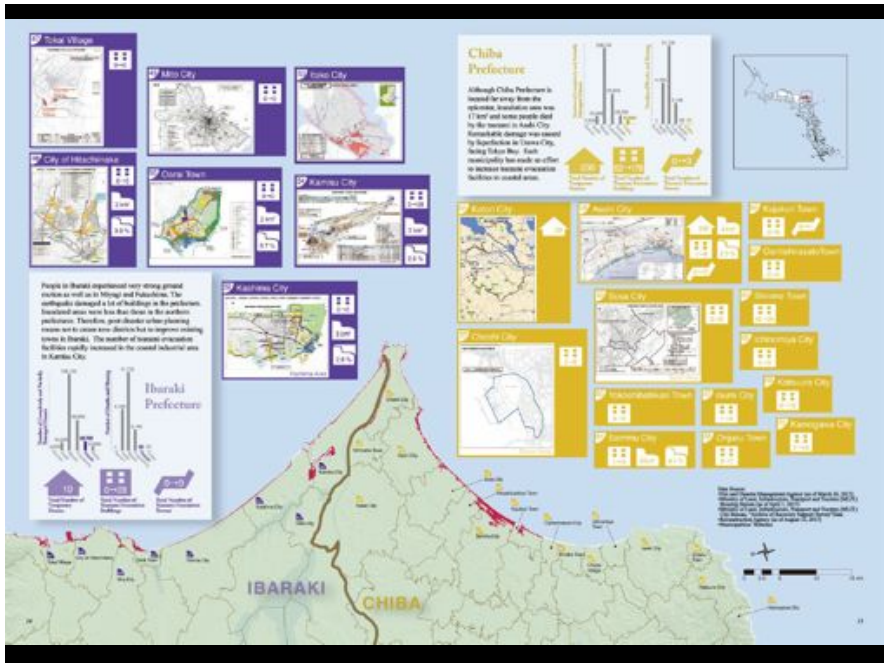
Disaster Management in Japan (CAO, 2011)











2011 Great East Japan Earthquake Review

Each topic, dealing with a specific case, contains

- context,
- situation before and after the event,
- good practices,
- problems, and
- future recommendations, summarized at the end of the chapter.

HFA Priority for Action 1

1. National Policy and Legal Frameworks for Disaster Risk Reduction
2. Evacuation System for “Persons with Special Needs” in Nuclear Disasters
3. Dedicated and Adequate Resources for Disaster Management in Japan
4. University Faculty as a Non-Governmental Resource to Support Disaster Risk Reduction in Recovery Planning with Local Government
5. Community Participation in Japan
6. Japan’s Multi-sectoral Platform for Disaster Risk Reduction

HFA Priority for Action 2

7. Improvement in Risk Assessment and Early Warning Systems with Real-time Monitoring: Lessons from the 2011 Tohoku Earthquake and Tsunami
8. Importance of Quantitative Assessment of Uncertainties and their Visualization in Tsunami Hazard Assessment
9. Tsunami Fragility Curves for Supporting Reconstruction and Future Risk Assessment
10. Small-area Population Estimates and Landscape Planning for Hazard Assessment and Reconstruction Planning
11. Earthquake Early Warning System in Schools and at a University during the 2011 Tohoku Earthquake
12. Monitoring of Land Slides and Status of Buildings and Construction Areas by Radar Technology

HFA Priority for Action 3

13. Information Sharing, Cooperation, and Expert Training Provided by Academic Research Institutes for Natural Disasters
14. Education to Build a Culture of Safety and Resilience at All Levels around Academic Research Institutes
15. Education Practice Program for Improving Response Capability to Survive from a Tsunami
16. Development of the Reconstruction Mapping Program at the Tsunami-affected Elementary School
17. International Post-graduate Education Program for Disaster Medicine; Collaboration with Tohoku University Human Security Program
18. Recent Advances in Numerical Simulation for Disaster Prevention in the View of the 2011 Great East Japan Earthquake

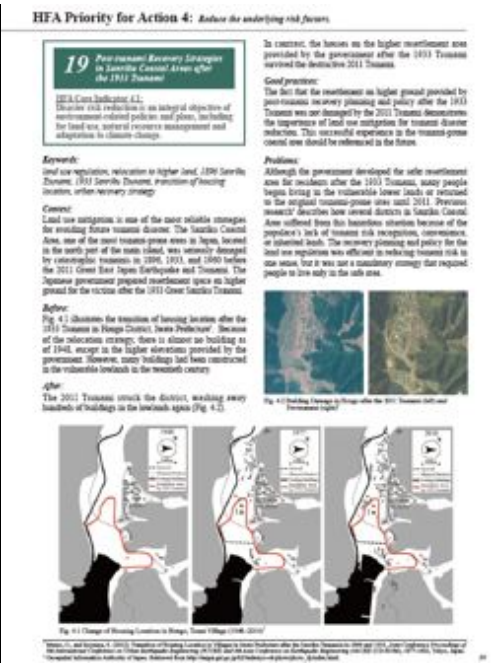
HFA Priority for Action 4

19. Post-tsunami Recovery Strategies in Sanriku Coastal Areas after the 1933 Tsunami
20. Integrated Perspective of Civil Engineering, Architecture and Urban Planning
21. Measures for People Requiring Assistance during a Disaster
22. Enhancement of Business Continuity Plans and Business Continuity Management
23. Disruption of Supply and Supply Chain Management
24. Promotion of the Earthquake-proof Retrofit of Buildings after the 1995 Great Kobe Earthquake
25. Public Housing for the Mitigation on the Negative Impact of Environmental Transition on the Victims
26. Post-tsunami Recovery for Risk Reduction after the 2011 Great East Japan Earthquake and Tsunami
27. Destruction of Coastal Levees by the 2011 Tsunami and their Reconstruction
28. Comprehensive Post-tsunami Recovery after the 201 Great East Japan Earthquake and Tsunami

HFA Priority for Action 5

29. Measures and Agenda for Large-scale Disasters in Japan: from the Perspective of Personal Information and Disaster Prevention Education
30. National Preparedness of Disaster Medicine as Tertiary Risk Reduction
31. Enhancement of Plans for Operational Continuity of Government
32. Three Coastal Districts in Iwaki City, Fukushima Prefecture: Differences Resulting from the Local Residents Organization Disaster Response Activities
33. Pre-Disaster Activities to Preserve Historical Materials and the Great East Japan Earthquake
34. DMAT as the First and Long-lasting Responder
35. Legal and Financial Frameworks for Recovery and Reconstruction
36. Preparedness for Low-frequency and High-impact Disasters from a Medical Perspective
37. Prospect of Future Information Exchange Methods in the Event of a Disaster by Taking Advantage of SNS

19 Post-tsunami Recovery Strategies in Sanriku Coastal Areas after the 1933 Tsunami


HFA Priority for Action 4: *Reduce the underlying risk factors.*

19 *Post-tsunami Recovery Strategies in Sanriku Coastal Areas after the 1933 Tsunami*

HFA Core Indicator 4.1:
Disaster risk reduction is an integral objective of environment-related policies and plans, including for land use, natural resource management and adaptation to climate change.

Keywords:
land use regulation; relocation to higher land; 1896 Sanriku Tsunami; 1933 Sanriku Tsunami; transition of housing location; urban recovery strategy

Context:
Land use mitigation is one of the most reliable strategies for avoiding future tsunami disaster. The Sanriku Coastal Area, one of the most tsunami-prone areas in Japan, located in the north part of the main island, was seriously damaged by catastrophic tsunamis in 1896, 1933, and 1960 before the 2011 Great East Japan Earthquake and Tsunami. The Japanese government prepared resettlement space on higher ground for the victims after the 1933 Great Sanriku Tsunami.

Before:
Fig. 4.1 illustrates the transition of housing location after the 1933 Tsunami in Hongo District, Iwate Prefecture[1]. Because of the relocation strategy, there is almost no building as of 1948, except in the higher elevations provided by the government. However, many buildings had been constructed in the vulnerable lowlands in the twentieth century.

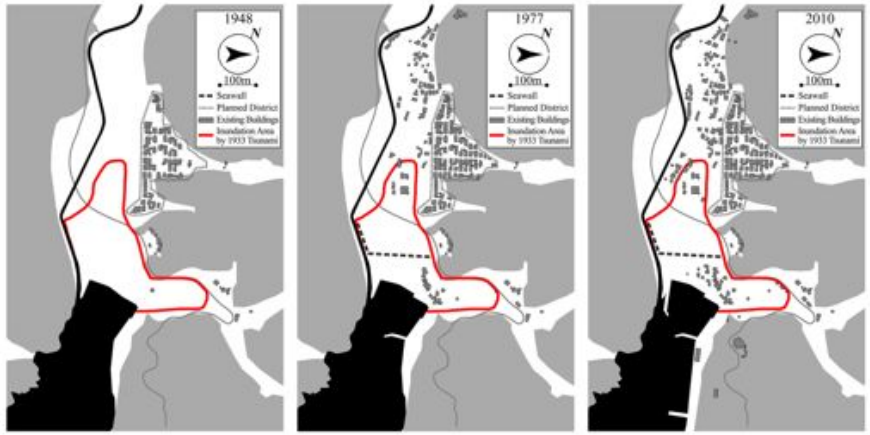
After:
The 2011 Tsunami struck the district, washing away hundreds of buildings in the lowlands again (Fig. 4.2).

In contrast, the houses on the higher resettlement area provided by the government after the 1933 Tsunami survived the destructive 2011 Tsunami.

Good practices:
The fact that the resettlement on higher ground provided by post-tsunami recovery planning and policy after the 1933 Tsunami was not damaged by the 2011 Tsunami demonstrates the importance of land use mitigation for tsunami disaster reduction. This successful experience in the tsunami-prone coastal area should be referenced in the future.

Problems:
Although the government developed the safer resettlement area for residents after the 1933 Tsunami, many people began living in the vulnerable lower lands or returned to the original tsunami-prone sites until 2011. Previous research[2] describes how several districts in Sanriku Coastal Area suffered from this hazardous situation because of the population's lack of tsunami risk recognition, convenience, or inherited lands. The recovery planning and policy for the land use regulations was efficient in reducing tsunami risk in one sense, but it was not a mandatory strategy that required people to live only in the safe area.

Change of Housing Location in Hongo, Touni Village



21 Measures for People Requiring Assistance during a Disaster


21 *Measures for People Requiring Assistance during a Disaster*

HFA Core Indicator 4.2:
Social development policies and plans are being implemented to reduce the vulnerability of populations most at risk.

Keywords:
elderly people, Guideline for Evacuation Support of People Requiring Assistance During a Disaster, evacuation, emergency network

Context:
It is vital for the elderly and disabled to be supported and assisted by neighbors in immediately evacuating from disastrous situations. The government and neighboring communities must strive to establish a framework for managing the various aspects of this issue.

Before:
To support such community activities, the Cabinet Office released the *Guideline for Evacuation Support of People Requiring Assistance During a Disaster* in 2005 and the *Preparation of Measures for Supporting Persons Requiring Assistance During a Disaster*, which contains case studies from recent disasters, in 2007. They were also supposed to support municipal governments in producing several plans. The 2005 Guideline document consists of the following five activities.

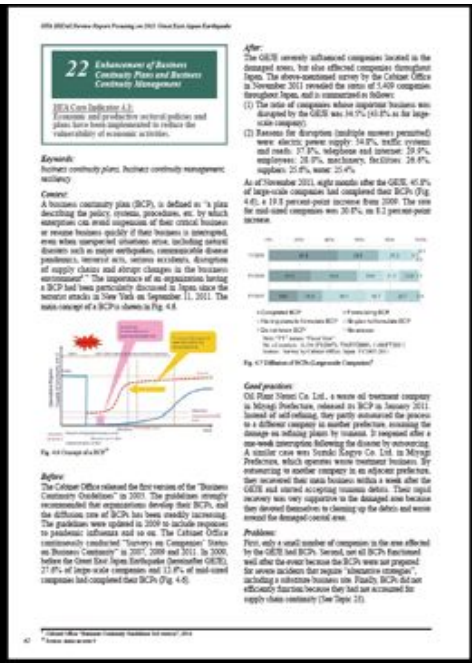
1. **Improving the information communication system**
   - Announcement of evacuation preparation information
   - Establishment of a support unit for people requiring assistance
   - Secure communications through various means such as the Internet and emergency call message service
2. **Sharing of information concerning people requiring assistance during a disaster**
   - Collection and clarifying of information on people requiring assistance in various ways
   - Promotion of exceptional use of social-welfare-related personal information to prepare evacuation support systems
3. **Creating a tangible evacuation support plan for people requiring assistance during a disaster**
   - Creation of an evacuation support plan for each individual requiring assistance
   - Recognition of the importance of making communities resilient to disasters
4. **Assistance at evacuation center**
   - Establishment of an information desk for people requiring assistance at evacuation centers
   - Establishment of welfare evacuation centers
5. **Collaboration among related organizations**
   - Continuity of welfare services in disaster situations
   - Wide-area support of health nurses
   - Establishment of a committee on evacuation support for people requiring assistance at the municipal level

After:
Fig. 4.5 indicates the number of casualties, by age, due to the 2011Great East Japan Earthquake and Tsunami and the 1995 Great Kobe Earthquake. Both exhibit a similar tendency of the death toll by age in that the ratio of the older populace is higher than that of the younger. However, the ratio in the 2011 event is remarkably higher than that in the 1995 Earthquake. The deaths from the 1995 Earthquake were caused largely by building collapse, so a dwelling's structural type and age were significant. In contrast, the 2011 deaths were caused largely by the tsunami, so evacuation methods from the vulnerable area to safer places were critical. Thus, residents' age or health condition was an important factor affecting their lives. Following the guidelines, many districts had striven the strong community assistance for each people, but not all community plans worked well because of the size of affected zones and geographical conditions.

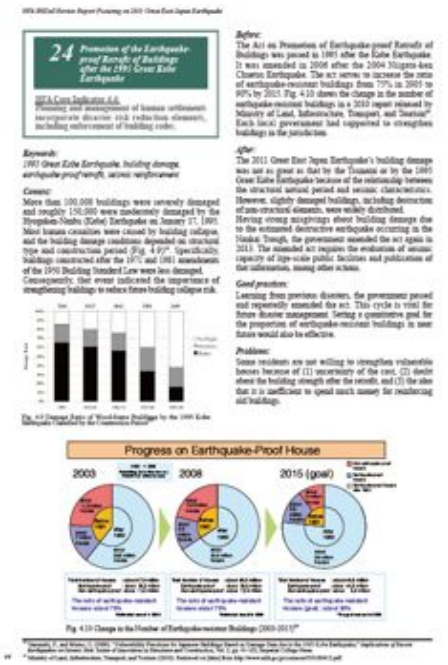
Good practices:
There were many elderly people needing assistance in shelters after the tsunami. Himeshigaru in Japan dispatched supporters for them, and because of keeping accurate records of the elders' information, that plan worked well[3].

Problems:
The Cabinet Office[4] named problems in each response phase clarified by the event, as follows:
Before: lack of supporting systems, including acceptance of people and organizations, lack of dissemination of the procedures, shortage of helpers, shortage of previous drills.
Emergency response: no list of the elderly, not knowing how to use the lists, no guidelines, no information on evacuation for the elderly
At the shelter: after the emergency response: difficulty in continuing to live with other people, lack of shelters, insertion of response systems to the elderly, unsatisfactory health care, lack of information and materials, insufficient support by local governments because of damage, difficulties faced by infants and expectant mothers.

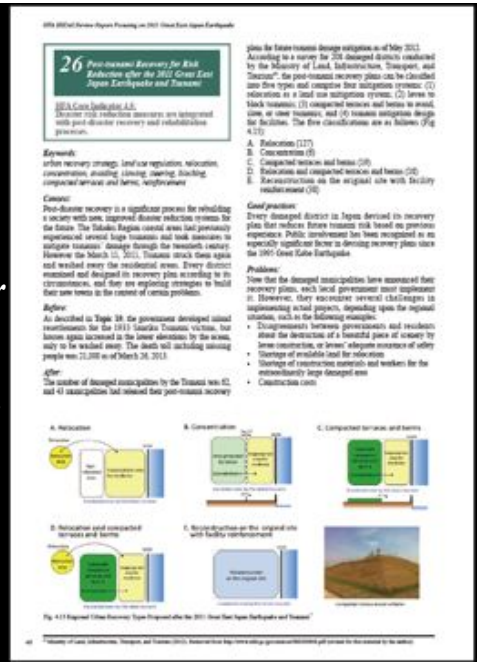
22
Enhancement of Business Continuity Plans and Business Continuity Management



24
Promotion of the Earthquake-proof Retrofit of Buildings after the 1995 Great Kobe Earthquake



26
Post-tsunami Recovery for Risk Reduction after the 2011 Great East Japan Earthquake and Tsunami



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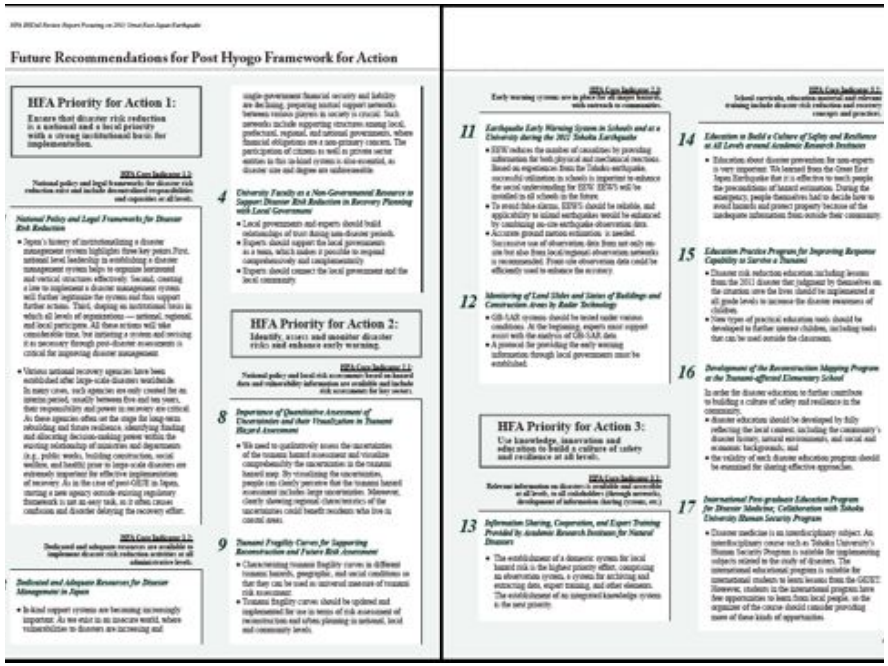
Comprehensive Post-tsunami Recovery after the 201 Great East Japan Earthquake and Tsunami

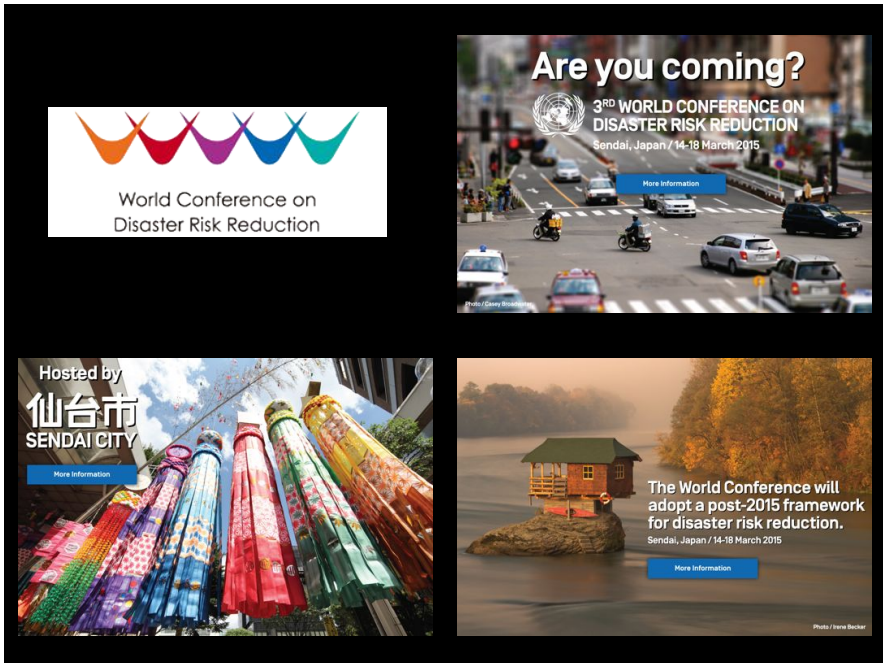


Future Recommendations for Post Hyogo Framework for Action

HFA Priority for Action 1:
Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.

HFA Priority for Action 2:
Identify, assess and monitor disaster risks and enhance early warning.

HFA Priority for Action 3:
Use knowledge, innovation and education to build a culture of safety and resilience at all levels.



http://irides.tohoku.ac.jp/hfa/index.html

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Thank you for your kind attention!

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