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Global sharing of the findings from the past great earthquake disasters in Japan promoted by Science Council of Japan and 30 Academic Societies' Liaison

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Abstract: After the 2011 Great East Japan Earthquake, the members of Science Council of Japan became founders and 30 academic societies relevant to disaster management gathered and established 'Academic Society Liaison Association Corresponding to the Great East Japan Earthquake.' This association aims to collaborate across academies and deepen mutual understanding, and discuss the future direction of collaboration among different expertises. Academic Society Liaison Association and Science Council of Japan held 10 serial symposiums regarding 'How to protect people's lives and national land from huge hazards' from December 2011 to November 2014. As the 10th of the Serial Symposiums, we held "Global sharing of the findings from the past great earthquake disasters in Japan". We also declared "Joint Statement of 30 Disaster-Related Academic Societies of Japan", and published the booklet summarizing 30 academic societies' international activities and initiatives against the great earthquakes. We present this Joint Statement and appeal that experience and knowledge learnt from natural disasters should be widely applied to reduce all disasters worldwide. We emphasize the importance of collaborating across academies.

Keywords: the 2011 Great East Japan Earthquake; Disaster mitigation; Gaps among specialties; Academic society liaison; Global sharing

1. INTRODUCTION¹

In academic world, specialization has been progressed and integration has been weakened. For prevention and mitigation of disasters, a number of research fields are involved, such as earthquake, tsunami, active faults, ground, earthquake engineering, wind engineering, fire, disaster prevention planning and emergency medical care. We need comprehensive platform beyond the boundaries.

Japanese scientists and engineers have worked hard for disaster reduction, but they were divided into each specialty. Specialization has caused gaps. The Great East Japan Earthquake was huge and exceeded our expectations. Our scientific knowledge and technologies were not enough.

After the 2011 Earthquake, the members of Science Council of Japan became founders and academic societies relevant to disaster management gathered to deepen mutual understanding and make efforts to integrate different specialties. At present, 30 Japanese academic societies and the members of Science Council of Japan gathered, and we call '30 academic societies' liaison.' These academic societies are in both natural and social science fields, such as physical science, engineering, medicine, sociology, and economics, etc.

2. SERIAL SYMPOSIUMS ACROSS ACADEMIES

The Association and Science Council of Japan held 10 serial symposiums of 'How to protect people's lives and national land from huge disasters' from 2011 to 2014. This Association aims to collaborate across academies and discuss the future direction beyond different expertise.

Based on these activities, we presented Joint Statement of 30 Academic Societies "Proposal for Revision of Japanese Disaster Prevention and Reduction Policies" on May 10, 2012. This joint statement was formally approved by each academic society. Representatives of the association and academic societies handed this joint statement over to Minister of Land, Infrastructure and Transport, Cabinet Office Minister in charge of Disaster Prevention, and Vice Minister of Education, Culture, Sports and Science. The Japanese government showed interest to this statement.

We also published a special feature in "Trends in the Sciences" March 2013, monthly magazine of the Science Council, as the results of the activities of Academic Society Liaison Association.

The themes of serial symposiums are:

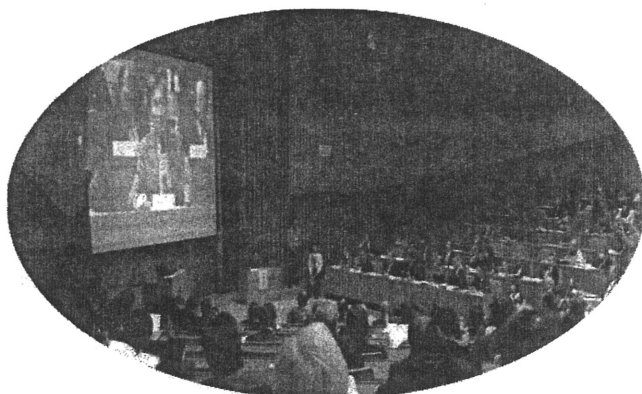
- 1: Prediction of earthquake and tsunami hazards for disaster reduction, November 2011
- 2: For the next national land policy on the premise of great disasters, January 2012
- 3: How to realize disaster mitigation society, February 2012
- 4: Preparedness for the next mega-quake, May 2012
- 5: Direction of regional and urban planning after the big earthquake, June 2012
- 6: How to re-create the energy policy from the accident of the nuclear power station, July 2012
- 7: A New approach for making resilient homeland after the

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- 2011 Great East Japan earthquake, August 2012
8: All-inclusive forum and prospective society collaboration, November 2012
9: How should academic societies face to the Nankai Trough Earthquake?, December 2013
10: Global sharing of the findings from the past great earthquake disasters in Japan, November 2014



10th symposium on November 29, 2014

The 10th of the Serial Symposiums was held in advance of the United Nations World Conference on Disaster Risk Reduction (March, 2015 Sendai, Japan), the Tokyo Conference on International Study for Disaster Risk Reduction and Resilience (January, 2015 Tokyo, Japan), the World Engineering Conference and Convention (November, 2015 Kyoto, Japan).

The scholars and researchers of societies relevant to disaster management including social economy field and medical field gathered and discussed.

Experience and knowledge acquired from natural disasters including the 2011 Great East Japan Earthquake and the 1995 Kobe Earthquake should be applied for disaster prevention and mitigation in the world.

3. JOINT STATEMENT OF 30 DISASTER-RELATED ACADEMIC SOCIETIES

Based on these activities, we declared "Joint Statement of 30 Disaster-Related Academic Societies of Japan", and published the booklet that consists of 30 academic societies' international activities and initiatives against the great earthquakes. The joint statement is shown in the following pages.

Even if each research is deepened, regional disaster mitigation is not actually improved without the collaboration among different fields. Steering Committee of Academic Society Liaison Association recommends that researchers of different fields participate the practical project in specified area under the local constraints. Especially, young researchers need the comprehensive study on the site.

4. CONCLUSIONS

We present this Joint Statement and appeal that experience and knowledge learnt from natural disasters should be widely applied to reduce all disasters worldwide. We emphasize the importance of collaborating across academics and discussing the direction of future beyond different expertise.

In Japan, Nankai Trough and Tokyo Metropolitan Inland Earthquakes are feared. In Asia, there is a tendency that disasters occurs severer and more frequently. We must prepare for next catastrophes. Science Council of Japan and 30 Academic Societies will collaborate across academics to promote multidisciplinary research for disaster reduction in the world.

ACKNOWLEDGMENTS

These four-year activities were promoted by council members of the Science Council of Japan and supported by the presidents and the members of the 30 societies shown in this paper.

We appreciate the great help of President Takashi Onishi, former vice President Fumiko Kasuga, vice President Keisuke Hanaki and many professors of Science Council of Japan.

In March 2015, Japanese Association for Disaster Medicine held the twenty-anniversary symposium with Academic Society Liaison Association. This was the memorable discussion of medical doctors and scientists. We also welcome a new member of Japan geoscience union. Interdisciplinary collaboration is going to spread steadily.



Science Council of Japan and Representatives of 30 Academic Societies, November 29, 2014

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Joint Statement of 30 Disaster-Related Academic Societies of Japan
Global sharing of the findings
from the Past Great Earthquake Disasters in Japan

- Toward the 2015 United Nations World Conference on Disaster Risk Reduction -
- Toward the World Engineering Conference and Convention 2015 -

November 29, 2014

Academic Society Liaison Association
Corresponding to the Great East Japan Earthquake

Executive Committee (members of the Committee on Civil Engineering/Architecture of Science Council of Japan)

Architectural Institute of Japan
Atomic Energy Society of Japan
Institute of Social Safety Science
Japan Association for Fire Science and Engineering
Japan Concrete Institute
Japan Society for Natural Disaster Science
Japan Society of Engineering Geology
Japan Society on Water Environment
Japanese Institute of Landscape Architecture
The Japan Landslide Society
The Japanese Geotechnical Society
The Japanese Society of Irrigation, Drainage and Rural Engineering
The Society of Environmental Instrumentation Control and Automation
The Society of Instrument and Control Engineers
Japan Society of Material Cycles and Waste Management

Association for Children's Environment
Geographic Information Systems Association of Japan
Japan Association for Earthquake Engineering
Japan Association for Planning and Public Management
Japan Society for Disaster Information Studies
Japan Society of Civil Engineers
Japan Society of Erosion Control Engineering
Japanese Association for Disaster Medicine
The City Planning Institute of Japan
The Japan Society of Mechanical Engineers
The Japanese Society for Active Fault Studies
The Seismological Society of Japan
The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan
The Japan Association for Regional Economic Studies

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Joint Statement of 30 Disaster-Related Academic Societies of Japan

**Global sharing of the findings
from the Past Great Earthquake Disasters in Japan**

- Toward the 2015 United Nations World Conference on Disaster Risk Reduction -
- Toward the World Engineering Conference and Convention 2015 -**

The 2011 off the Pacific coast of Tohoku Earthquake (Great East Japan Earthquake) was huge and exceeded our expectations. Its induced damage was so serious that we are still recovering from it and still face many issues. Response activities undertaken against the accident of the Fukushima Dai-ichi Nuclear Power Station are very difficult and insufficient to alleviate its impact to both inland and marine environments.

For many years, Japanese scientists and engineers have been trying to establish scientific knowledge and to develop technologies for disaster reduction, but they were divided into each specialty. Specialization has caused significant knowledge gaps and communication difficulties among specialties. Issues between specialties have not been tackled. There is a serious reflection that we blindly believed our scientific knowledge and technologies and we didn't have enough sense of the awe and humble feeling to nature.

After the 2011 Great East Japan Earthquake, we, 30 Japanese academic societies related to disaster management, started to deepen mutual understanding and made efforts to integrate different specialties. We also studied lessons for better recovery and preparedness from the 1995 Kobe Earthquake disaster and others.

Experience and knowledge learnt from natural disasters should be widely applied to reduce all disasters worldwide. Prior to the United Nations World Conference on Disaster Risk Reduction (March, 2015 Sendai, Japan) and the World Engineering Conference and Convention 2015 (November, 2015 Kyoto, Japan), representatives from these 30 academic societies relevant to disaster management, have started to discuss ways of exchanging very rare and important experience and knowledge on such disasters.

For global sharing, the representatives of 30 societies declare to promote the following actions:

1. Serious soul-searching on blind belief in our science and technologies

We, Japanese scientists and engineers, have been trying to establish scientific knowledge and to develop technologies for disaster reduction and we could reduce damage by natural hazards to lower levels than before. But based on the experiences after the 2011 Great East Japan Earthquake, we seriously recognized that there was blind belief in our scientific knowledge and technologies and that they were not enough. We should always question our knowledge and never forget the sense of awe and humble feeling to nature for implementation of a disaster safe society.

2. Sharing of our experiences with international community

We will contribute to disaster reduction around the world by sharing the lessons learnt from the past earthquake disasters, such as the 2011 Great East Japan Earthquake and the 1995 Kobe Earthquake disasters. We will emphasize the importance of pre-event countermeasures including damage mitigation, preparedness, disaster prediction and early warning, and warning for the possibility of unexpected huge hazards with extremely low probability.

3. Collaboration of academic societies

We will collaborate across academies to promote multidisciplinary research for disaster reduction and sustainable development. The researchers in both natural and social science fields, such as physical science, engineering, medicine, sociology, and economics etc. will work together to create practical measures that have been examined from various perspectives.

4. Application to local communities

We will integrate different specialties and establish comprehensive and effective risk reduction countermeasures for local communities around the world as well as in Japan, considering each local environment and condition.

5. Enhancing earth observation and strengthening international human network

We will enhance the global earth observation and monitoring system, and carry out broad and integrated studies across the earth sciences, focusing on evolution and dynamics of the earth. We will pursue the cause of natural disasters and strengthen the international network of researchers and practitioners for disaster reduction.

6. Resiliency for huge hazards that exceed conventional expectations

We will consider the preparedness against huge hazards, which lie beyond conventional expectations. Even if it seems to be technically impossible, we will do our best to find a way to reduce the impact due to the hazard considering environmental issues and needs for uninterrupted business and social activities during and after severe disasters.

7. Human resource development

We will promote the capacity building of scientists and engineers worldwide by sharing knowledge and experiences learnt from the past earthquake disasters around the world. We will develop Japanese experts in comprehensive disaster management who can work nationally and internationally. We will also train local experts who can contribute to local disaster risk control and management.

8. Public awareness

We will improve public awareness, which is one of the most important measures for disaster reduction. Pre-disaster countermeasures are effective in both human security and economic growth. We will present the knowledge based on the experiences from the past earthquake disasters in an easy-to-understand format to the public. We will promote understanding of the self-help effort, mutual assistance and public support, and will appeal their importance for disaster reduction to the public.

Academic Society Liaison Association Corresponding to the Great East Japan Earthquake

Executive Committee (members of the Committee on Civil Engineering/Architecture of Science Council of Japan)

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'Academic Society Liaison Association Corresponding to the Great East Japan Earthquake'

The members of Science Council of Japan become founders and 30 academic societies relevant to disaster management gathered since the 2011 Great East Japan Earthquake occurred. This Association and Science Council of Japan held 10 serial symposiums of 'How to protect people's lives and national land from huge hazards'. This Association aims to collaborate across academies and deepen mutual understanding, and discuss the direction of future beyond different expertise. This activity is supported by the Interdisciplinary sub-committee set up under the Committee on Civil Engineering / Architecture of Science Council of Japan.

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