Promotion of interdisciplinary collaboration

Recommendations:

1. Disaster risk reduction (DRR) requires interdisciplinary collaboration, because it cannot be achieved by a single academic discipline; the academy of science in each country should take interdisciplinary action to implement the Sendai Framework.

2. The academic sector should provide the public and private sectors with practical evidence (scientific knowledge) to assist the country in making effective investment in disaster risk reduction. The public and private sectors should also request such evidence. Collaboration among the three sectors further facilitates interdisciplinary and transdisciplinary approaches for DRR.

3. DRR aims at not only disaster risks from natural hazards but also those derived from human beings and technologies. To assess anthropogenic and technological risks, new approaches and technologies for risk assessment should be developed from an interdisciplinary perspective covering humanities and social sciences. Such approaches and technologies should be shared and used by all disciplines involved.

4. When a mega disaster, complex disaster, or widespread disaster occurs, collaboration among disciplines, communities, and countries is needed more than at any other time. The importance of such collaboration should be addressed among all stakeholders in normal times.

5. For effective interdisciplinary collaboration, the definition and usage of terminology should be standardized and shared among disciplines involved. International organizations and academic communities should play a leading role in confirming the definition and usage of existing terminology and eliminate disagreements and misunderstandings.

Background and key directions:

Many cases have been reported about adverse effects originating in sectionalism in the academic and public sectors and separation between science and technology and policy making. Since disaster risk reduction covers the process from the occurrence of a hazard, to the exposure of citizens to the hazard, and to recovery, rehabilitation and reconstruction, it should be discussed from an interdisciplinary perspective involving science and technology, human behavior and psychology, socio-economic impacts, social and legal systems, and policy implementation.

Disaster risk reduction should be studied in an integrated effort joined by different disciplines, and the outcomes should be used in policy making at a right time for a proper purpose and contribute to substantial reduction in deaths and damage. Each country should take necessary action to promote interdisciplinary collaboration in its academic sector and inter-sectional collaboration among the academic, public and private sectors in order for them to work effectively for common purposes.
Explanation of recommendations:

1. **Disaster risk reduction (DRR) requires interdisciplinary collaboration, because it cannot be achieved by a single academic discipline; the academy of science in each country should take interdisciplinary action to implement the Sendai Framework.**

   The Japan Academic Network for Disaster Reduction (JANET-DR) was established in January 2016 with support from the Science Council of Japan to network 56 academic societies (including associations and unions of societies) in the field of disaster and DRR. Such a mechanism should be created and put in place for the academic sector of each country to encourage societies and scientists of different disciplines to join interdisciplinary collaboration. UN and other international organizations should assist countries in creating a mechanism which assists the academic sector in playing a leading role in facilitating interdisciplinary collaboration. In March 2015, the Global Summit of Research Institutes for Disaster Risk Reduction was held and the Global Alliance of Disaster Research Institutes (GADRI) was established, consisting of 160 research centers in disaster risk reduction from 35 countries. GADRI functions as an international network which links different disciplines and is joined by UN and other international organizations including UNISDR, UNESCO, and the European Commission Joint Research Centre (EC-JRC), and thus it is ready to be used as an excellent foundation to foster practical collaboration.

2. **The academic sector should provide the public and private sectors with practical evidence (scientific knowledge) to assist the country in making effective investment in disaster risk reduction. The public and private sectors should also request such evidence. Collaboration among the three sectors further facilitates interdisciplinary and transdisciplinary approaches for DRR.**

   To promote science and technology for disaster risk reduction, it is critically important to keep in mind the four action priorities of the Sendai Framework. The implementation of science and technology for DRR requires the use of scientific knowledge to plan and execute governance and investment, i.e., evidence-based policy implementation, and calls for interdisciplinary collaboration among different disciplines and transdisciplinary collaboration among different sectors. These collaborations should be further strengthened by involving all disciplines and sectors in mutually providing technical support, cooperatively developing training materials, and together creating a platform that allows all actors to fully access to various types of practical information on DRR including good practices.

3. **DRR aims at not only disaster risks from natural hazards but also those derived from human beings and technologies. To assess anthropogenic and technological risks, new approaches and technologies for risk assessment should be developed from an interdisciplinary**
perspective covering humanities and social sciences. Such approaches and technologies should be shared and used by all disciplines involved.

To increase understanding of risks of natural, man-made, technological, and complex disasters and apply appropriate measures to reduce such risks, lessons from past disasters such as the Great East Japan Earthquake should be studied and interdisciplinary collaboration should be encouraged between natural and social sciences including humanities. In the midst of an era in which technology is evolving fast and the environment is changing day by day both locally and globally, new approaches and technologies that can adapt to these changes should be developed and practiced. The Future Earth, an initiative to address global challenges, promotes the generation of knowledge in partnership with society and users of science under the concepts of Co-Design, Co-Production, and Co-Delivery. This principle is also valid in DRR. The Future Earth, too, lists disaster as one of their priority issues and recommends a transdisciplinary approach to tackle disaster-related problems.

4. **When a mega disaster, complex disaster, or widespread disaster occurs, collaboration among disciplines, communities, and countries is needed more than at any other time. The importance of such collaboration should be addressed among all stakeholders in normal times.**

To cope with mega disasters, complex disasters, or widespread disasters, collaboration is necessary before, during and after disasters. At present, DRR measures for floods, earthquakes, volcanic eruptions and slope failures are planned separately, and each of them are considered effective to a certain degree. However, more efforts should be made to strengthen interdisciplinary, regional and international collaboration for mega disasters that are extreme in scale, area and duration. UN and other international organizations such as UNISDR should support such collaborative organizations.

5. **For effective interdisciplinary collaboration, the definition and usage of terminology should be standardized and shared among disciplines involved. International organizations and academic communities should play a leading role in confirming the definition and usage of existing terminology and eliminate disagreements and misunderstandings.**

The 2009 UNISDR Terminology on Disaster Risk Reduction has already published and translated into several languages (http://www.preventionweb.net/publications/view/7817). Such publication needs updating constantly. The standardization and common use of the definition and usage of terminology should be promoted in collaboration; international cooperation efforts also should be continued consistently. In the 2016 United Nations General Assembly, the open-ended intergovernmental expert working group on indicators and terminology relating to DRR made recommendations to this effect, and revised the UNISDR terminology with some additions. It has been available on the UNISDR website since February 2017.