

Proposal on Nation's Synthesis on Disaster Risk Reduction Supported by Science and Technology

The Tokyo Resilience Forum, held in November 2017, agreed to formulate guidelines for supporting national platforms for DRR by making the best use of science and technology and produce a synthesis report on disaster science and technology. Since each country is expected to lead the way for the implementation of this agreement in consideration of their conditions, they should develop a mechanism that allows all stakeholders to share information on science and technology for DRR in their own language. With this information infrastructure, the national platform of each country should review the status and issues of the current DRR efforts that they have implemented based on scientific knowledge. The national platform should then discuss how DRR should be carried out for the country, and design practical measures to be implemented from a holistic viewpoint. This series of actions that should be taken by the national platform of each country is called "Synthesis" as a whole, and we propose that Synthesis should be promoted under international cooperation.

1. Background and Goals

Tremendous damage by disasters has frequently been reported around the world due to extraordinary natural hazards and growing socio-economic and other anthropogenic activities. The impact is particularly harmful to developing countries whose disaster resilience is still weak. In some cases, the impact of a disaster is unexpectedly strong and can cross borders easily to extensive areas. As a consequence, the damage lingers for an extended period over not only the center of the disaster but also surrounding areas including those at a great distance, affecting the world economy profoundly.

In 2015, the world agreed on milestone accords regarding DRR: the Sendai Framework for Disaster Risk Reduction 2015-2030, the Addis Ababa Action Agenda, the Sustainable Development Goals (SDGs), and the Paris Agreement on Climate Change. The Quito Declaration on Sustainable Cities and Human Settlements for All followed in 2016. These agreements clearly stress the global intention to build disaster resilient communities and to share scientific knowledge on disaster risks and disaster risk reduction approaches. In the meantime, many challenges are still ahead of us to realize the implementation of practical DRR measures by incorporating scientific knowledge in

policy development and public behavior.

This reality needs changing, and the national platform should play an active role as a hub organization where all stakeholders such as policymakers, practitioners, private enterprises, and citizens' groups meet with the science & technology community to discuss issues and nurture transdisciplinary collaboration between society and science & technology, in order to increase disaster preparedness, coping capacity and resilience as a country. When the national platform becomes active, the information of disaster risks will be shared among stakeholders, public disaster literacy will be thus strengthened, and thereby disaster risks will be reduced. In addition, communities with better preparedness, coping capacity and resilience will emerge in which each stakeholder understands and fulfills their responsibilities in DRR. To promote science-based DRR discussion at the national platform, however, it is essential for each country to look into the current relationship between the science & technology community and policymakers and plan an appropriate approach for facilitating dialogue between the two parties accordingly. Organized action by the global society will be indispensable to support each country in this effort.

To strengthen DRR through all these processes, the Tokyo Statement 2017, agreed by the Resilience Forum, proposes that the science & technology community of each country create the following two documents in cooperation with stakeholders.

- 1) Guidelines for strengthening national platforms for DRR and coordination mechanisms through enhanced contribution of science and technology.
- 2) Periodic synthesis reports on the state of science and technology for reducing disaster risk.

The present proposal aims to promote dialogue between stakeholders and the science & technology community as the basis for creating these two documents. Each country should develop an online information sharing system under international cooperation to share synthesized information of science and technology among a broad range of stakeholders. With this information infrastructure, the national platform of each country should review the status and issues of the current DRR efforts that they have implemented based on scientific knowledge. The national platform should then discuss how DRR should be carried out for the country, and design practical measures to be implemented from a holistic viewpoint. All these processes should contribute to the enhancement of dialogue between the two parties, which will result in the production of guidelines and synthesis reports.

2. Purposes

- (1) Each country should establish a coordinating mechanism where the science & technology community and stakeholders involved in DRR will practice Synthesis regularly and continuously; thereby, decision making, investment, and response before, during and after a disaster, all of which are based on scientific knowledge, will be planned and implemented throughout society and thus contribute to the improvement of disaster literacy in society.
- (2) The international community should establish a supporting mechanism that assists each country in this effort by giving advice and sharing experience and expertise in disaster science and technology, capacity development and financing.

3. Goals

- (1) Each country should develop an information infrastructure for the science & technology community and stakeholders involved in DRR to share information on the status of the current DRR efforts implemented based on science and technology and good practices and lessons from domestic and overseas cases.
- (2) The national platform of each country should facilitate dialogue between the science & technology community and stakeholders regarding issues to be addressed for the implementation of DRR measures using shared information and scientific knowledge, as well as the direction, goals, actions that reflect the conditions of each country, so as to contribute to the development of a DDR strategy that is called for to be finalized by 2020 in the Sendai Framework for Disaster Risk Reduction.
- (3) Each country should promote the efforts in 3-(1) and (2) to be widely practiced in society at large, more specifically to take root even at the municipal level, so that disaster literacy will be improved.
- (4) Global and regional academic organizations should support the science and technology community of each country in sharing the knowledge and experience of disaster science and technology and designing an information infrastructure. UN agencies and international donor organizations should be active in raising DDR awareness of each country and financing the development and operation of the information infrastructure.

4. Desired functions of the information infrastructure

- (1) Function to collect and store information on scientific knowledge and various activities related to DDR in each country
 - 1) This function should enable the science & technology community of each country,

in cooperation with stakeholders in respective fields, to archive information in their mother tongue including: scientific knowledge accumulated by each country related to the four priority actions of the Sendai Framework on Disaster Risk Reduction and basic information on social systems and policies of each country. Information to be archived should be classified into three categories: "understanding" referring to academic papers, reports and documents on social systems, and "development" and "dissemination" concerning measures for DRR.

- 2) This function should include a portal function for a group of stakeholders to search for and share information provided by other groups of stakeholders.
 - 3) UN agencies and international academic organizations provide information on globally accepted scientific knowledge related to the four priority actions of the Sendai Framework of Disaster Risk Reduction. This function should enable users to search for and select information relevant to their country from such information, and archive the selected information in their mother tongue.
 - 4) This function should enable users to search for and select information related to the seven global targets (three input targets and four outcome targets) and archive the selected information in their mother tongue.
- (2) Function to collect and store lessons from past efforts and good practices of DDR designed and implemented based on science and technology
- 1) This function should enable users to archive, in their own language, lessons and good practices in which the four priority actions of the Sendai Framework for Disaster Risk Reduction have been implemented effectively based on science and technology as collaboration between the science and technology community and relevant stakeholders of each country.
 - 2) UN agencies, international academic organizations, and other countries also provide information on lessons and good practices in which the four priority actions of the Sendai Framework for Disaster Risk Reduction have been implemented effectively based on science and technology. This function should enable users to search for and select information relevant to their country from such information and archive the selected information in their mother tongue.
- (3) Function to promote dialogue
- 1) This function should enable users to search for, integrate and visualize the information mentioned in 4-(1) and (2) and share it between the science and technology community and stakeholders, as well as widely in society.

- 2) This function should be capable of supporting bilateral information exchange and active networking between the science & technology community and stakeholders.
- (4) International cooperation to support individual countries
- 1) Global and regional academic organizations (ISC, STAG, IRDR, GADRI, SCA, etc.)
 - (a) Global and regional academic organizations should provide workshops and other opportunities for the science & technology communities around the world to commonly understand and practice a transdisciplinary approach using disaster science and technology.
 - (b) Global and regional academic organizations should arrange an international advisory committee to provide each country with advice on the interoperability (multilingual function, metadata design and registration, ontology management, etc.) and operation of the information infrastructure.
 - 2) UN agencies and international donor agencies (UNISDR, UNESCO, WMO, UNU, Development Bank, national donors, etc.)
 - (a) UN agencies and international donor agencies should study approaches to increase incentives for countries to implement DRR Synthesis using scientific knowledge.
 - (b) UN agencies and international donor agencies should provide consulting and financing for formulating DRR strategy goals and roadmaps based on Synthesis.

5. Schedule

- (1) Development of an action plan: Present-May 2019
 - 1) Role of the International Science and Technology Community: The co-chairs of the Tokyo Resilience Forum and the partner organizations should start drafting an action plan through telephone meetings while consulting with STAG, IRDR, GADRI, SCA and others about the possibility of cooperation. After that, a workshop with involved parties should be held back to back with IRDR SC scheduled in fall 2018, and finalize the draft action plan to be proposed by the International Science and Technology Community.
 - 2) Role of UN agencies and international donor agencies: UN agencies and international donor agencies should explore an international mechanism to support the effort by each country through political processes such as the Asia

Disaster Minister Conference and consultations with the World Bank, GFDRR, and regional development banks.

- 3) The results of 5-(1)-1) and 2) should be reported as a draft action plan at the Global Platform in May 2019.

(2) Implementation Phase 1 (FS): May 2019 to 2020

A prototype information infrastructure should be developed with the cooperation of about ten countries, and used by those countries to develop a DRR strategy by 2020. The results will be evaluated.

(3) Implementation Phase 2 (Implementation): 2021 to 2023

Based on the results of Phase 1, the information infrastructure should start regular operation in an appropriate number of countries for this phase. The national platform of each participating country should practice Synthesis to promote DRR based on scientific knowledge, and incorporate the results in policies and public behavior for DRR.