G-Science Academies Statement 2016:

Strengthening Disaster Resilience is Essential to Sustainable Development

Present Status

In the decade between 2005 and 2014, more than 6,000 natural and technological disasters occurred around the world, which killed more than 0.8 million people, displaced millions more, and cost more than 1 trillion USD [*1*]. Losses due to disasters are increasing in both developed and developing countries. Human factors that increase exposure and vulnerability, such as poverty, rapid population growth, disorderly urbanization, corruption, conflict and changes in land use, poor infrastructure including non-engineered housing, together with effects of climate change on weather patterns with increased extreme events, aggravate the negative consequences of natural and technological hazards. Disasters derail sustainable development, particularly in developing countries. Consequently, the need to embed disaster risk reduction into sustainable development goals is paramount.

In the globalized 21st century, a disaster in one country creates disruptions in others: the 2011 Thailand floods cut off car component factories and adversely affected car production in Europe; the 2004 Indian Ocean tsunami inundating the beaches of Thailand and killing more than 5,000 people including tourists caused the largest numbers of deaths from a natural hazard in Sweden's history; the 2006 drought in Syria was one of several contributing conditions that led to the current humanitarian crisis; and the Great East Japan Earthquake in 2011 led to a tsunami, a nuclear facility malfunction, and economic effects worldwide. International events like these show the connection between disaster resilience and sustainable development.

Decision makers need better tools to understand impacts of these types of crises, cope with natural hazards, respond to technological breakdown, and apply lessons from past experiences to improve emergency preparedness and capacities to manage crises. Science can contribute by deepening the understanding of hazards and improve ability to anticipate future emergencies and quantify impacts. Innovative engineering can decrease impacts and provide critical information for planning, rapid response and recovery. Furthermore, cascading effects of disasters require better understanding of connections, and strong international cooperation; at present, international collaboration in disaster risk reduction is not sufficient.

Key Direction

In 2015, the international community agreed on three major accords: the Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework), the Sustainable Development Goals (SDGs), and the Paris Agreement on Climate Change (Paris Agreement). These agreements collectively present an urgent need and opportunity for action in 2016 and beyond. There are important connections among these agreements. For example, the SDGs and Paris Agreement identify actions that can build resilience against both meteorological and geophysical hazards. Also, the Sendai Framework embeds disaster risk reduction as an indispensable part of sustainable development through four of its priorities:

Priority 1: understanding disaster risk
Priority 2: strengthening disaster risk governance to manage disaster risk
Priority 3: investing in disaster risk reduction for resilience
Priority 4: enhancing disaster preparedness for effective response and to "build back better" in recovery, rehabilitation, and reconstruction.

Increasing disaster resilience involves many stakeholders. To realize these priorities and to build resilient societies, we need to maximize the use of existing knowledge and create new types of science and technology that serve broad and collective societal needs. Building this new approach requires interdisciplinary research, collaboration, and cooperation among natural sciences; engineering; medical, social and political sciences; and the humanities. Transdisciplinary collaboration and excellent communication between scientists, practitioners, and policy-makers are essential.

With the increased scientific knowledge, innovation and technology, the scientific community can identify risks, evaluate system vulnerabilities, and become more effective in communicating the interconnected nature of disaster risk. Efforts are needed to strengthen national platforms for disaster risk reduction, and encourage or enable scientists and practitioners to work closely with relevant stakeholders in locally relevant contexts and language. Common, compatible, or even standardized disaster information resources and indices should be developed for easier exchange among different countries and regions. Integrated analysis of disaster data and information should be promoted to accelerate international cooperation and help countries identify the most impactful ways for bringing resources to a disaster, its risk reduction, or a response. These efforts will ensure interoperability among countries during multi-national responses, lead to better data on the costs of disasters, and greatly reduce losses through mitigation and resilience-building efforts.

Actions that Build Disaster Resilience and Sustainable Development

The following six actions are recommended for policymakers to increase resilience capacities applicable to a wide range of disasters, their cascading effects, and implications for foreign aid, assistance, or economic impacts.

1. Develop metrics and indicators for evaluating exposure, vulnerability and resilience. Metrics and indicators can be used to:
   - identify, visualize, and evaluate under-recognized disaster risks that hinder sustainable development by taking a holistic view of the changes in hazards, vulnerabilities and exposures arising from societal and environmental problems.
   - anticipate, prepare for, and reduce the consequent disaster risks effectively or in consistent ways
   - ascertain ways to evaluate level of risks.
   - make informed investment decisions and to understand value returns on investments
2. Advance scientific and technical knowledge and improve assessment of disaster risk, including building relevant data infrastructure that advances ability to anticipate future events with greater accuracy, developing disaster damage data archives, and expanding understanding of how disasters unfold across different regions and sectors.
3. Improve understanding of natural and human-made hazards, by developing new technologies and applying effective and innovative engineering for disaster prevention, by constantly raising political and public awareness and through effective emergency response and recovery - including mental and physical health management.
4. Strengthen inter- and trans-disciplinary collaborative efforts in cooperation through a major international research platform, such as Future Earth [2], providing the knowledge and support to accelerate our transformations to a sustainable world [2].
5. Engage the investor community. Investors, from both the private and public sectors, are important players in disaster risk reduction. It is important to find ways to engage them more fully in disaster resilience decision making, as investments will drive the future of sustainable development.
6. Promote sharing information, initiate a forum to share best practices and lessons learned in disaster risk reduction and provide practical solutions to implement the Sendai Framework, focusing on community of practices with relevant stakeholders including the private sectors.

References:

[1] 2015 World Disaster Report: http://ifrc-media.org/interactive/wp-content/uploads/2015/09/1293600-World-Disasters-Report-2015en.pdf
[2] Future Earth web site: http://www.futureearth.org/

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