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## **Space-based information and the Sendai Framework for Disaster Risk Reduction**

### **Note by the Secretariat**

Between July 2014 and March 2015, Member States negotiated a new framework to provide continuity to the efforts that began more than decades ago aiming to reduce the impacts of natural hazards worldwide through disaster risk reduction efforts. The negotiations were completed in March 2015 during the World Conference on Disaster Risk Reduction (WCDRR) that took place in Sendai, Japan and the new framework for disaster risk reduction was launched at the end of this conference.

The present document contains the outcome summary of the process conducted by the United Nations Office for Outer Space Affairs through its UN-SPIDER Programme, and several partners, as a way to advocate the use of space-based information during the WCDRR and in the Sendai framework for disaster risk reduction.

### **I. Background**

1. Recognizing the devastating impact that disasters provoke in communities around the world; the United Nations has carried out a sustained effort since 1990 as a way to introduce changes in development frameworks used in many countries around the world so that when natural hazards such as typhoons or earthquakes manifest themselves, the impacts are lessened. The first effort began in 1990 with the International Decade for Natural Disaster Risk Reduction. In 2005, Member States met in Kobe, Japan, just a few weeks after the great Indian Ocean tsunami that provoked more than 250,000 fatalities in several countries, to agree on and to launch the Hyogo Framework for Action as a way to steer efforts towards Disaster Risk Reduction (DRR) through the incorporation of explicit policies on DRR, through an improved understanding of disaster risk, the implementation of early



warning systems, capacity building and institutional strengthening efforts and through efforts in the area of disaster preparedness. The Hyogo Framework for Action (HFA) was stipulated to be valid for the period 2005 – 2015.

2. Taking note of the recommendations that emerged from the UNISPACE 3 Conference in 1999, the Office for Outer Space Affairs dedicated efforts to provide visibility to the use of space-based information in the HFA. The HFA makes reference to the use of Earth observations, space technologies, remote sensing, and geographic information systems as a way to contribute to hazard modelling and prediction, weather and climate modelling and forecasting, communication tools and to the studies of the costs and benefits of risk assessment and early warning; and to support disaster risk reduction, particularly for training and for the sharing and dissemination of information among different categories of users;

3. At the international level, UNOOSA introduced specific text in the segment of the HFA dedicated to regional and international cooperation, to promote closer collaboration with existing networks and platforms as a way to cooperate to support globally consistent data collection and forecasting on natural hazards, vulnerabilities and risks and disaster impacts at all scales.

4. In 2006, the General Assembly of the United Nations implemented the UN-SPIDER programme, at the recommendation of the Committee on the Peaceful Uses of Outer Space, as a platform to promote the use of space-based information in all phases of the disaster management cycle, with a particular focus on developing countries.

5. Taking note of the efforts conducted by the United Nations Office for Disaster Risk Reduction (UNISDR) related to the WCDRR; the UN-SPIDER programme elaborated a plan of work since February 2014 as a way to advocate and promote the use of space-based information during the WCDRR, and to incorporate explicit content on the use of this information in the Sendai framework for Disaster Risk Reduction (Sendai framework).

6. UNOOSA/UN-SPIDER staff conducted three regional and international events in 2014 that included specific sessions dedicated to the WCDRR; took part in the Preparatory Committee Meetings of the WCDRR in Geneva in July and November of 2014, and worked with several partners to lobby specific governments to request the incorporation of explicit text on Earth observation and the use of space-based technologies in the Sendai framework.

7. As an outcome of these efforts, UNOOSA / UN-SPIDER and more than 20 partners including other United Nations Organizations, regional organizations, and national space agencies and disaster risk reduction committees were able to conduct a dedicated working session on the use of Earth observation technologies during the conference, to launch a Global Earth Observation Partnership, and to incorporate specific text on the use of Earth observations, space-based technologies, geographic information systems and remote sensing applications in the Sendai framework.

8. Taking into consideration the fact that the Sendai framework will be the highest-level policy guiding document on DRR in the next fifteen years, UNOOSA/UN-SPIDER will work with a variety of partners as a way to promote

and advocate the use of space-based information as a way to contribute to the achievement of the goals stipulated in the Sendai framework.

## II. Efforts conducted by UNOOSA / UN-SPIDER in the context of the Sendai WCDRR

9. Taking note of the announcement of the conduction of a new conference on disaster risk reduction as a way to launch a new framework that should provide continuity to the HFA, UNOOSA/UN-SPIDER spearheaded an integrated effort to provide visibility to- and to advocate the use of- space-based information with a network of partners. UNOOSA/UN-SPIDER staff conducted a series of regional and international events and participated in preparatory committee meetings as a way to ensure the provision of visibility to the use of space-based information during the conference and in the new framework and participated in a dedicated symposium organized by the Japan Aerospace Exploration Agency (JAXA) during the annual session of the Scientific and Technical Sub Committee of the Committee on the Peaceful Uses of Outer Space in February 2015.

10. UNOOSA/UN-SPIDER conducted a special side event during the Asian Ministerial Conference on DRR in June 2014 to promote the use of space-based information in the context of the WCDRR. It also conducted its UN-SPIDER Bonn Expert meeting in June 2014 and its UN-SPIDER Beijing Conference in September 2014 as a way to gather and elevate specific recommendations regarding texts to be incorporated in the Sendai framework.

11. Taking note of the suggestions for the incorporation of specific texts on the use of Earth observation and space-based applications gathered from various partners, including the German Aerospace Center (DLR), JAXA, the Group on Earth Observations (GEO) and the Committee on Earth Observation Satellites (CEOS); UNOOSA/UN-SPIDER staff participated in the two Preparatory Committee Meetings conducted in July and in November 2014 and worked with several governments to incorporate specific texts on the use of Earth observation and space-based applications in the Sendai framework as recommended by these partners.

12. The Sendai framework includes one main goal, seven targets and four Priorities for Action: Understanding disaster risk; Strengthening [governance/institutional arrangements/organizational, legal and policy frameworks] to manage disaster risk; Investing in disaster risk reduction for resilience; and Enhancing disaster preparedness for effective response, and to Build Back Better in recovery, rehabilitation and reconstruction.

13. The use of Earth observations, space-based applications, geographic information systems and remote sensing is included in three paragraphs related to Priority 1: Understanding Disaster Risk:

(a) At the national and local levels, paragraph 24(c) contains the following texts: “Develop, update periodically and disseminate, as appropriate, location-based disaster risk information, including risk maps, to decision makers, the general public and communities at risk to disaster in an appropriate format by using, as applicable, **geospatial information technology**”; and “Promote real-time access to reliable data, make use of **space** and in situ **information**, including geographic

information systems (GIS), and use information and communications technology innovations to enhance measurement tools and the collection, analysis and dissemination of data”;

(b) At the regional and international levels, paragraph 25(c) contains the following text: “Promote and enhance, through international cooperation, including technology transfer, access to and the sharing and use of non-sensitive data, information, as appropriate, communications and geospatial and **space-based technologies and related services**. Maintain and strengthen in situ and **remotely-sensed earth and climate observations**. Strengthen the utilization of media, including”.

14. The Sendai framework also addresses the need to promote the conduction of comprehensive surveys on multi-hazard disaster risks and the development of regional disaster risk assessments and maps, including climate change scenarios; and the need to enhance the development and dissemination of science-based methodologies and tools to record and share disaster losses and relevant disaggregated data and statistics, as well as to strengthen disaster risk modelling, assessment, mapping, monitoring and multi-hazard early warning systems; and the need to support the development of local, national, regional and global user-friendly systems and services for the exchange of information on good practices, cost-effective and easy-to-use disaster risk reduction technologies and lessons learned on policies, plans and measures for disaster risk reduction.

15. As a way to reach the goals stipulated in the framework, the Sendai frameworks makes reference to the need for capacity building and institutional strengthening efforts; the provision of technical advisory support, and the need to enhance technology transfer involving a process of enabling and facilitating flows of skill, knowledge, ideas, know-how and technology from developed to developing countries.

16. To achieve the proposed goals, the Sendai framework makes reference to several means of implementation at the regional and international levels, including North-South cooperation, complemented by South-South and triangular cooperation. Furthermore, the framework recognised the fact that global partnerships can “play an additional important role by harnessing the full potential of countries and supporting their national capacities in disaster risk management and in improving the social, health and economic well-being of individuals, communities and countries”.

17. At this regional and international level, the Sendai framework makes reference to the following means of implementation:

(a) Reaffirm that developing countries need enhanced provision of coordinated, sustained, and adequate international support for disaster risk reduction, in particular for the least developed countries, small island developing States, landlocked developing countries and African countries, as well as middle-income countries facing specific challenges, through bilateral and multilateral channels, including through enhanced technical and financial support, and technology transfer on concessional and preferential terms as mutually agreed, for the development and strengthening of their capacities;

(b) Enhance access of states, in particular developing countries to finance, environmentally sound technology, science and inclusive innovation, as well as knowledge and information-sharing through existing mechanisms, namely bilateral, regional and multilateral collaborative arrangements, including the United Nations and other relevant bodies;

(c) Promote the use and expansion of thematic platforms of cooperation such as global technology pools and global systems to share know-how, innovation and research and to ensure access to technology and information in disaster risk reduction.

(d) Incorporate disaster risk reduction measures into multilateral and bilateral development assistance programmes within and across all sectors, as appropriate, related to poverty reduction, sustainable development, natural resource management, environment, urban development and adaptation to climate change.

18. The Sendai Framework for disaster risk reduction recommended to the General Assembly the establishment of an open-ended intergovernmental working group, comprised of experts nominated by Member States, and supported by the UNISDR, with the involvement of relevant stakeholders, for the development of a set of possible indicators to measure global progress in the implementation of the Sendai framework in conjunction with the work of the inter-agency expert group on sustainable development indicators.

19. Recognizing the usefulness of international partnerships, UNOOSA/UN-SPIDER worked together with 17 partners including UN and other international and regional organizations, national space agencies and national disaster risk reduction committees or agencies to design and launch a Global Partnership on Earth Observations during the WCDRR. The partnership aims to:

(a) Continue to facilitate the dialogue among stakeholders in Earth Observation, Satellite-based technologies and the global community of DRR experts and policy makers, including by the compilation and exchange of lessons learned regarding the use of such observations and technologies;

(b) Serve as a collective source and repository of information on efforts carried out worldwide by the EO and Satellite-based technology communities, including surveys and guidelines to improve the applications of existing and emerging technology to monitor hazards, exposure and risks;

(c) Generate policy-relevant advice to contribute to the integration of Earth Observation and satellite-based technologies into development processes and public policies relevant to DRR, including by facilitating the incorporation of research and technology advances in the activities of the DRR community;

(d) Facilitate the use of EO and related technology to monitor progress in the implementation of the post-2015 framework for DRR;

(e) Mobilize additional actors and stakeholders to contribute to efforts conducted by the partnership worldwide.

20. The partnership held its first follow-up meeting during the United Nations/Germany International Conference on Earth Observation – Global Solutions for the Challenges of Sustainable Development in Societies at Risk, held in Bonn, Germany on 26-28 May 2015. Partners discussed three issues during this meeting:

activities, the plan of work for the coming two years, the terms of reference of the partnership and the governance mechanism.

21. The partnership will initiate its activities in the coming months and is expected to provide some initial results by 2016.

22. The WCDRR was also used to advocate and promote the use of Earth observation in disaster risk reduction applications. To this end, UNOOSA/UN-SPIDER and more than 20 partners conducted a dedicated working session in the official venue of the conference and participated in two side sessions in the Public Forum of the World Conference.

23. UN-SPIDER also took the opportunity to elaborate a specific issue of its Newsletter, which focused on ways in which Earth observation can be used in DRR efforts. This newsletter was distributed during the WCDRR (<http://www.un-spider.org/news-and-events/newsletter/un-spider-newsletter-115-space-based-information-disaster-risk-reduction>).

### **The way forward**

24. As a way to continue the efforts that were conducted under the umbrella of the WCDRR, UNOOSA/UN-SPIDER will continue to dedicate efforts to promote the use of space-based information in all phases of the disaster management cycle in line with the Sendai framework priorities for action.

25. The first follow-up activity has been the conduction of the United Nations/Germany International Conference on Earth Observation – Global Solutions for the Challenges of Sustainable Development in Societies at Risk. This conference was held in Bonn, Germany on 26-28 May 2015. This conference, organized by the UN-SPIDER Bonn Office on behalf of UNOOSA, in cooperation with the German Federal Ministry for Economic Affairs and Energy (BMWi) and DLR, provided the setting to make the more than 120 participants aware of the Sendai framework and how this framework recognizes the benefits of the use of space-based information in DRR efforts. It also provided the setting for the conduction of the first follow-up meeting of the Global Earth Observation Partnership. In the coming months, the UN-SPIDER Bonn Office will continue to steer the efforts of the partnership as a way to initiate the activities that were agreed upon during the Bonn Conference.

26. In a similar fashion, the UNOOSA/UN-SPIDER programme will conduct its 5th Annual United Nations International Conference on Space-based Technologies for Disaster Management - “A consolidating role in the implementation of the Sendai Framework on Disaster Risk Reduction: 2015-2030”. This Conference will be held in Beijing, China, from 14 to 15 September and aims to emerge with a set of guidelines to assist Member States in their efforts to integrate Earth observation, space-based applications and geospatial technologies in implementing the Sendai Framework for Disaster Risk Reduction: 2015-2030.

27. Additional efforts will be conducted by UNOOSA/UN-SPIDER and its partners, under the umbrella of the Global Earth Observation Partnership, to promote the incorporation of space-based information and Earth observation to support the achievement of the goals and targets established in the Sendai

framework, and in the indicators that will be developed by Member States in the coming months to track progress related to the seven targets.

28. UNOOSA/UN-SPIDER will approach UNISDR to promote the use of space-based information and Earth observation in the indicators to be developed by experts from Member States and other relevant stakeholders as stipulated in the Sendai framework.

29. Taking note of the specific role delegated to the Scientific and Technical Advisory Group of UNISDR (STAG) in the Sendai framework; UNOOSA/UN-SPIDER will cooperate with UNISDR to contribute to the efforts conducted by the STAG in relation to the promotion of the use of science and technology to contribute to disaster risk reduction efforts worldwide. One of the key areas where UNOOSA/UN-SPIDER would see its contribution is in the transformation and implementation of scientific results in the area of Earth observation and other satellite technologies into routine methodologies that can be used by Member States to carry out efforts as a way to assess risks and those root causes that are leading to the construction of new risks, or those factors that increase the level of existing risks.

30. In addition, UNOOSA/UN-SPIDER will continue to provide technical advisory support in the coming months and years to Member States that elevate such a request to UNOOSA on the use of space-based information in disaster risk reduction efforts.

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