

# Earth Observation in the Context of the Sendai Framework for Disaster Risk Reduction

## Information Brief

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The use of remotely-sensed Earth Observation for disaster risk reduction is emphasized by the UN Sendai Framework for Disaster Risk Reduction 2015-2030, which was adopted by 187 UN member states in March 2015 at the UN World Conference on Disaster Risk Reduction in Sendai, Japan.

## What is Earth Observation?

Earth Observation is the study and observation of Earth by gathering information specifically on Earth's physical, chemical and biological systems with the use of remote sensing technologies, such as satellite imagery (GEO, 2017). It involves monitoring the Earth's natural and manmade environment and collecting data in order to analyse and assess the current situation, any changes and historical trends.

## Sendai Framework for Disaster Risk Reduction 2015 -2030'

'The 'Sendai Framework for Disaster Risk Reduction 2015—2030', which is the successor to the 'Hyogo Framework for Action (HFA) 2005-2015: Building the Resilience of Nations and Communities to Disasters', emphasises the usage of remotely-sensed Earth Observation for Disaster Risk Reduction. The Sendai Framework has 7 Global Targets to be achieved by 2030 and 4 'Priorities of Action'.

The 7 Global Targets are:

- Reduce global disaster mortality
- Reduce the number of affected people globally
- Reduce direct disaster economic loss in relation to GDP
- Reduce disaster damage to critical infrastructure and disruption services
- Increase the number of countries with national and local disaster risk reduction strategies
- Enhance international cooperation to developing countries
- Increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people

The Sendai Framework's 4 'Priorities of Action' are:

- Understanding disaster risk
- Strengthening disaster risk governance to manage disaster risk
- Investing in disaster risk reduction for resilience
- Enhancing disaster preparedness for effective response and to "build back better" in recovery, rehabilitation and reconstruction

## Our Focus

Incorporating Earth Observation within Disaster Risk Reduction will assist with addressing the 7 Global Targets; predominantly Global Target G.

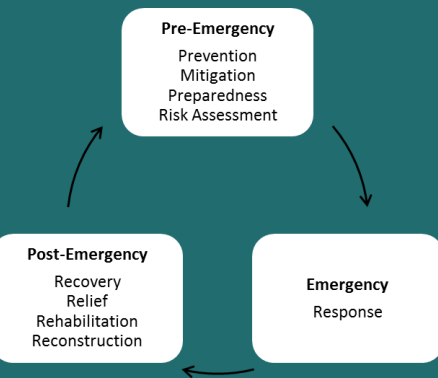
## Global Target G

- \* “To enhance the **development and dissemination of science-based methodologies** and 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.**” (para 25a)
- \* “To invest in, develop, maintain and strengthen **people-centred multi-hazard, multisectoral forecasting and early warning systems ...**” (para 33b)
- \* “To promote the further development of and investment in effective, nationally compatible, regional multi-hazard early warning mechanisms...” (para 34c)

## Role of Stakeholders

- \* “**Older persons** have years of knowledge, skills and wisdom, which are invaluable assets to reduce disaster risk, and they should be included in the design of policies, plans and mechanisms, including for **early warning.**” (para 36 iv)
- \* “**Indigenous peoples**, through their experience and traditional knowledge, provide an important contribution to the development and implementation of plans and mechanisms, including for **early warning.**” (para 36 v)
- \* “**Media** to take an active and inclusive role ... in contributing to the raising of public awareness and understanding and disseminate ... disaster risk, hazard and disaster information, including on ... **early warning systems ...**” (para 36 d)

### Disaster Management Cycle



“Satellite data, particularly Earth observation data, can provide valuable, unique information supporting both research into natural hazards and their causes and operational decision-making tied to both planning and response.” (CEOS, 2012)

## Scope for Earth Observation in the Sendai Framework's 'Priorities for Action'

### Relevant Sections Where Earth Observation can be Incorporated Along with Social Science

#### Overall Aim of the Sendai Framework:

The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.

#### Priority 1: Understanding disaster risk

- \* "To develop, periodically update and disseminate, as appropriate, **location-based disaster risk information, including risk maps**, to decision makers, the general public and communities ..." (para 24c)
- \* "To promote real time access to reliable data, **make use of space and in situ information**, including geographic information systems (GIS) ..." (para 24f)
- \* "To enhance the development and dissemination of science-based methodologies and ... to strengthen disaster risk modelling, assessment, **mapping**, monitoring and **multi-hazard early warning systems**." (para 25a)
- \* "To promote and enhance, through international cooperation ... **geospatial and space-based technologies** and related services; **maintain and strengthen in situ and remotely-sensed earth and climate observations** ..." (para 25c and 25g)

#### Priority 2: Strengthening disaster risk governance to manage disaster risk

- \* "...to foster more efficient planning, create common information systems and exchange good practices and **programmes for cooperation and capacity development**." (para 28a)

#### Priority 3: Investing in disaster risk reduction for resilience

- \* "To **promote the mainstreaming of disaster risk assessment, mapping and management** into rural development planning and management of ... rivers, coastal flood plain areas, drylands, wetlands and all other areas prone to droughts and flooding, including through the **identification of areas that are safe for human settlement** ..." (para 30g)

#### Priority 4: Enhancing disaster preparedness for effective response and the "build back better" in recovery, rehabilitation and reconstruction

- \* "To invest in, develop, maintain and strengthen **people-centred multi-hazard, multisectoral forecasting and early warning systems** ..." (para 33b and 34c)
- \* "To strengthen the capacity of local authorities to **evacuate persons** living in disaster-prone areas." (para 33m)

For more information on the Sendai Framework, please visit: <http://www.unisdr.org/we/coordinate/sendai-framework>

## Scope for Earth Observation in National Disaster Management Policies

### Kenya's National Disaster Management Policy 2010

- \* "Devolution and public participation ... Communities will be encouraged to establish mechanisms, **building on their traditional coping strategies to share knowledge and technologies** and to pool together local resources for disaster mitigation, preparedness, prevention, response and recovery." (Guiding Principal iv)
- \* "**Factoring of climate into disaster risk reduction**: More than 70 per cent of natural disasters in Kenya are related to extreme climate events ... The optimum factoring of climate/weather information (such as **Early Warning, technical and scientific analysis**) in disaster management is a vital component of this Policy." (Guiding Principle viii)
- \* "Providing early warning information on an impending disaster to population at risk in an appropriate manner ... A **people centred early warning system** will be developed with full participation of local people from both men and women." (para 4.1.2)
- \* "A **comprehensive environmental impact assessment** will be required after the first stages of relief to guide rehabilitation, reconstruction and all the processes to recovery ..." (para 4.1.7)
- \* "Government will come up with national risk, hazard and **disaster profiles and maps** of the country depicting ... natural and human-induced disasters." (para 5.1.10)

### Uganda's National Disaster Management Policy 2010

- \* "**Promote research and technology** in disaster risk reduction" (para 1.1.3 iv)
- \* "**Generate and disseminate information on early warning** for disasters and hazard trend analysis." (para 1.1.3 v)
- \* "Disaster Preparedness and Management requires integration of technical expertise, **indigenous and modern scientific knowledge** on hazards and disasters ... Government shall engage relevant expertise and **appropriate technologies** to come up with an effective disaster preparedness and management capability." (Guiding Principle 5)
- \* "Vulnerability Analysis Disaster preparedness and management depends on an accurate analysis and **mapping of the vulnerability** and susceptibility of communities to risks. It shall involve **geo-referencing, mapping and livelihood zoning**. Undertaking vulnerability analysis shall be part of the **early warning system**." (Guiding Principle 6)
- \* "Use the **early warning information** to educate community." (para 3.1.3.14 iii.)

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Project Funded by:  
NERC (March 2017)