



United Nations Office for Disaster Risk Reduction (UNISDR)—UNISDR’s Contribution to Science and Technology for Disaster Risk Reduction and the Role of the International Consortium on Landslides (ICL)

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Abstract

The Sendai Framework for Disaster Risk Reduction 2015–2030 was agreed at the Third UN World Conference on Disaster Risk Reduction in Sendai, Japan in March 2015 and endorsed by the UN General Assembly in June 2015. The goal of the Sendai Framework is to prevent new and reduce existing disaster risk. UNISDR coordinates and ensures synergies among the disaster reduction activities of the United Nations system and regional organizations and stakeholders. The role of science and technology in providing the evidence and knowledge on risk features prominently in the Sendai Framework. Expanding the interface between science, technology and policy is therefore essential for effective disaster risk reduction. In January 2016, UNISDR hosted the Science and Technology Conference on the Implementation of the Sendai Framework. The main outcome of the conference was the launching of the Science and Technology Partnership and the endorsement of the science and technology roadmap that outlines expected outcomes, actions, and deliverables under each of the four priority actions of the Sendai Framework. Over the last twenty years, the majority of disasters have been caused by floods, storms, heatwaves and other weather-related events. Most of these disasters can cause landslides, which in turn cause hundreds of billions of dollars in damage and hundreds of thousands of deaths and injuries each year. The International Consortium on Landslides (ICL) 2015–2025 and The Sendai Partnerships promotes global understanding and reduction of landslide disaster risk. They will contribute significantly to the implementation of the science and technology roadmap by providing practical solutions and tools, education and capacity building, and communication and public outreach to reduce landslides risks. UNISDR fully supports the work of the Sendai Partnerships and the community of practice on landslides risks.

Keywords

UNISDR • Sendai framework • Disaster risk reduction • Science and technology

The Sendai Framework for Disaster Risk Reduction (2015–2030)

The Sendai Framework for Disaster Risk Reduction 2015–2030 was agreed at the Third UN World Conference on Disaster Risk Reduction in Sendai, Japan in March 2015 and

endorsed by the UN General Assembly in June 2015 (UNISDR 2015a).

The goal of the Sendai Framework is to prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disasters, increase preparedness for response and recovery, and thus strengthen resilience.

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The expected outcome up to 2030 is to achieve a substantial reduction in disaster risk and losses in lives, livelihoods and health in the economic, physical, social, cultural and environmental aspects of people, the private sector, communities and countries. There are four priorities, seven targets, thirteen principles and suggested actions for stakeholders at global, regional, national and local levels.

The Sendai Framework sets out a path to ensure that disaster risk is factored into planning and development at all levels across all sectors, as well as in disaster preparedness, recovery and reconstruction. The Sendai Framework is wide in scope. It applies to the risk of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters, caused by natural or man-made hazards, as well as related environmental, technological and biological hazards and risks.

The Sendai Framework identifies four priorities for action, which call for focused action within and across sectors by States at local, national, regional and global levels in the following four priority areas:

1. Understanding disaster risk

Policies and practices for disaster risk management should be based on an understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment. Such knowledge can be leveraged for the purpose of pre-disaster risk assessment, for prevention and mitigation, and for the development and implementation of appropriate preparedness and effective response to disasters.

2. Strengthening disaster risk governance to manage disaster risk

Disaster risk governance at the national, regional and global levels is of great importance for an effective and efficient management of disaster risk. Clear vision, plans, competence, guidance and coordination within and across sectors, as well as participation of relevant stakeholders, are needed. Strengthening disaster risk governance for prevention, mitigation, preparedness, response, recovery and rehabilitation is therefore necessary and fosters collaboration and partnership across mechanisms and institutions for the implementation of instruments relevant to disaster risk reduction and sustainable development.

3. Investing in disaster risk reduction for resilience

Public and private investment in disaster risk prevention and reduction through structural and non-structural measures are essential to enhance the economic, social, health and

cultural resilience of persons, communities, countries and their assets, as well as the environment. These can be drivers of innovation, growth and job creation. Such measures are cost-effective and instrumental in saving lives, preventing and reducing losses and ensuring effective recovery and rehabilitation.

4. Enhancing disaster preparedness for effective response, and to “Build Back Better” in recovery, rehabilitation and reconstruction

Disasters have demonstrated that the recovery, rehabilitation and reconstruction phase, which needs to be prepared for ahead of a disaster, is a critical opportunity to “Build Back Better”, including through integrating disaster risk reduction into development measures, making nations and communities resilient to disasters.

To support the assessment of global progress in achieving the outcome and goal of this framework, seven global targets have been agreed. These targets will be measured at the global level. National targets and indicators will contribute to the achievement of the outcome and goal of this framework and an intergovernmental expert working group is developing indicators to measure global progress on the Framework’s seven agreed targets.

The seven global targets are:

1. Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020–2030 compared to 2005–2015.
2. Substantially reduce the number of affected people globally by 2030, aiming to lower the average global number per 100,000 between 2020–2030 compared to 2005–2015.
3. Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.
4. Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.
5. Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.
6. Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030.
7. Substantially increase the availability of, and access to, multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.

The UN Office for Disaster Risk Reduction (UNISDR)

The mandate of the UN Office for Disaster Risk Reduction (UNISDR) has been defined by a number of United Nations General Assembly Resolutions “to serve as the focal point in the United Nations system for the coordination of disaster reduction and to ensure synergies among the disaster reduction activities of the United Nations system and regional organizations and activities in socio-economic and humanitarian fields” (UN General Assembly Resolution 56/195).

UNISDR focuses on the following key activities:

- Coordinates international efforts for disaster risk reduction.
- Monitors progress in the implementation the Sendai Framework for Disaster Risk Reduction (2015–2030).
- Works closely with countries for building capacities for creating resilient societies.
- Provides tools and guidelines on DRR.
- Organizes regional and global platforms for DRR to report on progress and foster collaboration between countries and stakeholders.

Summary of Implementation of the Sendai framework 2016 as outlined in the UN Secretary General report (UNISDR 2016a).

During the first year of implementation, plans and approaches at all levels have been reviewed and revised by many Member States to align them with the Sendai Framework. In addition, many new partnerships have been established.

Effective integration of disaster risk management into sustainable development policies, practices and investments at all levels is critical. Therefore, concerted efforts have been made to establish coherence with other internationally agreed agendas and frameworks, including the Addis Ababa Action Agenda of the Third International Conference on Financing for Development, the 2030 Agenda for Sustainable Development and the Paris Agreement on climate change.

Progress of the implementation of the Sendai Framework will be reviewed regularly at global and regional platforms for disaster risk reduction. To facilitate this, extensive work has been undertaken on the global monitoring system for the Sendai Framework, including on the indicators for the global targets and updating the DRR terminology. This work will be concluded by end of 2016.

The Sendai Framework target on achieving a substantial increase in the number of countries with national and local

disaster risk reduction strategies by 2020 is the first milestone. To achieve this target, over the next four years concerted efforts will be required to better understand existing levels of disaster risk and trends, to develop strategies based on a sound knowledge of current challenges and to set clear priorities and targets. This will include the establishment or enhancement of data systems to record disaster losses and to establish hazard and vulnerability assessments and disaster risk estimates.

Continued collaboration and commitment by the public and private sectors to integrate disaster risk reduction into their respective policies, practices and investments is emphasized in the Sendai Framework and a call for a substantial increase in investment in disaster risk reduction is required. While some progress has been made in this regard, still more resources are needed to ensure substantial reduction of disaster risk and losses in lives and livelihoods, and assets of persons, businesses, communities and countries.

Science and technology is expected to provide valuable contributions to measuring progress through the Sendai Framework monitor, and by providing the evidence-base for the development and implementation of the national and local disaster risk reduction strategies and in public and private investment.

The Strong Emphasis on Science and Technology in Sendai Framework

A main feature of the Sendai Framework, in comparison to its predecessor (the Hyogo Framework of Action), is the shift of focus from managing ‘disasters’ to managing ‘risks’. Such a shift requires a better understanding of risk in all its dimensions of hazards, exposure and vulnerability. Therefore, the role of science and technology in providing the evidence and knowledge of risk features heavily in the Sendai Framework.

There are a number of references to science and technology in the Sendai Framework. Paragraph 36 (b) for example, requests: “Academia, scientific and research entities and networks to: focus on the disaster risk factors and scenarios, including emerging disaster risks, in the medium and long term; increase research for regional, national and local application; support action by local communities and authorities; and support the interface between policy and science for decision-making”.

More specifically, paragraph 25 (g) states: “Enhance the scientific and technical work on disaster risk reduction and its mobilization through the coordination of existing networks and scientific research institutions at all levels and all regions

with the support of the UNISDR Scientific and Technical Advisory Group in order to: strengthen the evidence-base in support of the implementation of this framework; promote scientific research of disaster risk patterns, causes and effects; disseminate risk information with the best use of geospatial information technology; provide guidance on methodologies and standards for risk assessments, disaster risk modelling and the use of data; identify research and technology gaps and set recommendations for research priority areas in disaster risk reduction; promote and support the availability and application of science and technology to decision-making; contribute to the update of the 2009 UNISDR Terminology on Disaster Risk Reduction; use post-disaster reviews as opportunities to enhance learning and public policy; and disseminate studies”.

Science and technology have a fundamental role to play in forecasting disasters, building resilient infrastructure and accurately calculating disaster losses. Expanding the interface between science, technology and policy is therefore essential for effective disaster risk reduction. Science and technology stakeholders participated actively in the World Conference on Disaster Risk Reduction, including announcing the launch of a number of science and technology initiatives and commitments to support the implementation of the Sendai Framework.

Given the call in the Sendai Framework for science and technology-based DRR, in addition to a number of commitments made by the scientific and technology community at the Third UN World Conference on Disaster Risk Reduction, a need for a stronger partnership has been identified with a clearer direction and strategy for implementation as a mechanism to ‘foster collaboration across global and regional mechanisms and institutions for the implementation and coherence of instruments and tools relevant to disaster risk reduction’ around common goals and actions identified in the road map.

The International Conference on Science and Technology for DRR

In January 2016, UNISDR hosted the Science and Technology Conference on the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030 (UNISDR 2016b, c). The main outcome of the conference, which was attended by more than 700 science and technology experts representing numerous scientific institutions and societies, as well as young scientists, was the launch of the Science and Technology Partnership, which consists of

major scientific and technical institutes and organizations, research centers, networks and platforms, and UN science-based organizations working on the different disciplines of advancing science and technology for disaster risk reduction (UNISDR 2015b).

The principal goal of the Scientific and Technical Partnership and its Advisory Group is to provide scientific and technical expertise and guidance to strengthen the evidence-base in support for the implementation of Sendai Framework.

The conference also endorsed the development of a comprehensive 15-year road map to define the expected outcomes of the science and technology work under the four Sendai Framework priorities for action and ways to monitor progress and needs.

The ‘Science and Technology Roadmap to Support the Implementation of the Sendai Framework’

The ‘Science and Technology Roadmap to Support the Implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030’ includes expected outcomes, actions, and deliverables under each of the four priority of actions of the Sendai Framework (UNISDR 2016d). The science and technology community can then link to and plan around the implementation of the Roadmap (Table 1).

Work plans for several of the deliverables (with responsibilities, outputs and a timeline) in the Roadmap can then be developed as appropriate. These can be developed on a needs basis with identified partners with the support of the UNISDR Science and Technology Advisory Group.

The partnerships that have been developed both for the Third UN World Conference on Disaster Risk Reduction in March 2015 and the UNISDR Science and Technology Conference in January 2016 are a core part of implementation of the Roadmap. The science and technology partnerships and initiatives help to complement and strengthen collaboration among the partners, within their respective mandates and expertise.

There are also a number of cross-cutting actions such as capacity development, gender equity, citizen engagement, public-private sector partnership, and coherence or alignment with other post-2015 global agendas such as Sustainable Development Goals and climate change conventions, which will need to be linked with other stakeholders actions in the implementation of the Sendai Framework.

Table 1 Summary of the expected outcomes of the Science and technology road map

Sendai framework priority for action	Science and technology expected outcomes
1. Understanding disaster risk	1.1 Assess and update the current state of data, scientific and local and indigenous knowledge and technical expertise availability on disaster risks reduction and fill the gaps with new knowledge 1.2 Synthesize, produce and disseminate scientific evidence in a timely and accessible manner that responds to the knowledge needs of policy-makers and practitioners 1.3 Ensure that scientific data and information support are used in monitoring and reviewing progress towards disaster risk reduction and resilience building 1.4 Build capacity to ensure that all sectors and countries have access to, understand and can use scientific information for better informed decision-making
2. Strengthening disaster risk governance to manage disaster risk	2.1 Support a stronger involvement and use of science to inform policy- and decision-making within and across all sectors at all levels
3. Investing in disaster risk reduction for resilience	3.1 Provide scientific evidence to enable decision-making of policy options for investment and development planning
4. Enhancing disaster preparedness for effective response, and to “Build Back Better” in recovery, rehabilitation and reconstruction	4.1 Identify and respond to the needs of policy- and decision-makers at all levels for scientific data and information to strengthen preparedness, response and to “Build Back Better” in Recovery, Rehabilitation and Reconstruction to reduce losses and impact on the most vulnerable communities and locations

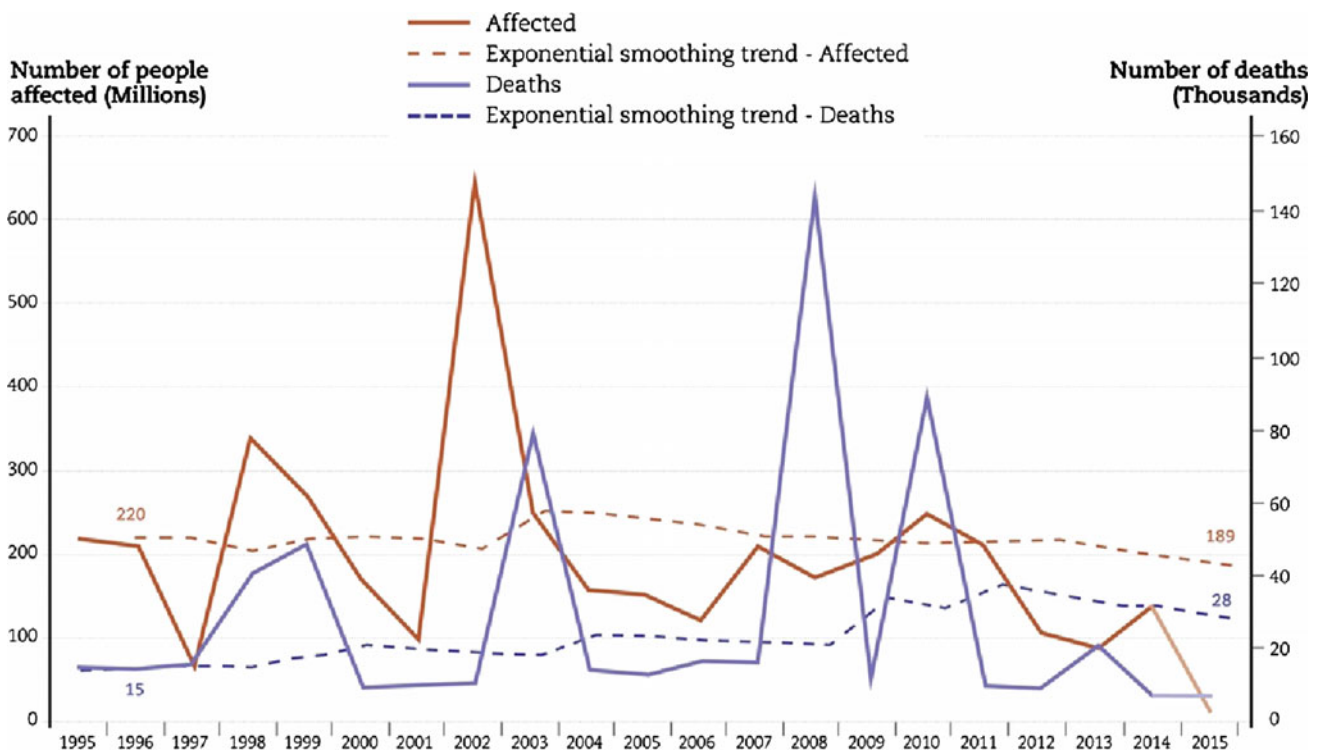


Fig. 1 Trends in the numbers of people affected and killed annually by weather-related disasters worldwide (1995–2015) (CRED 2016a)

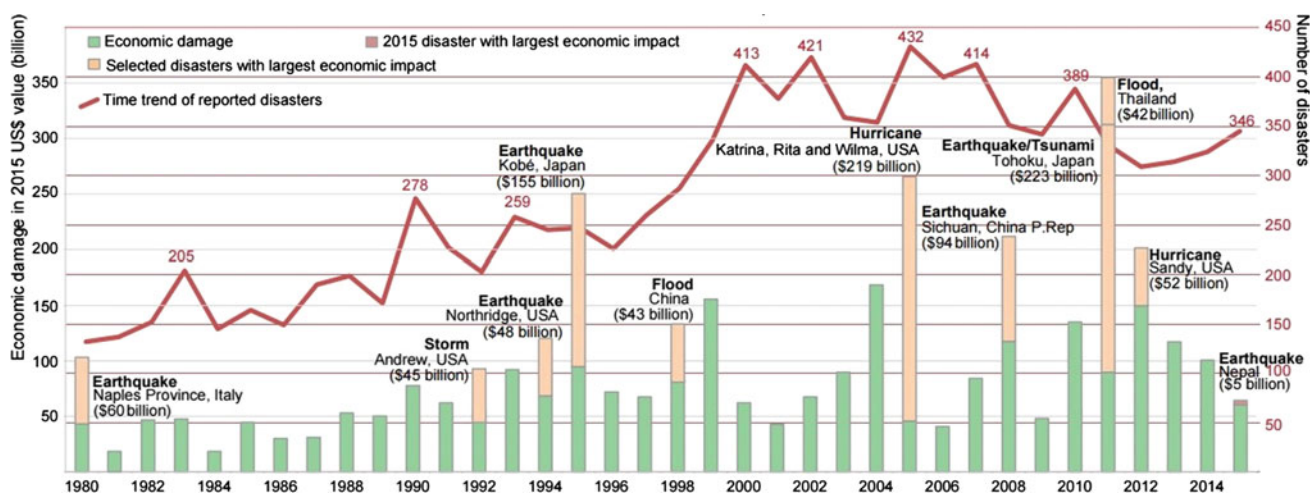


Fig. 2 Annual occurrence and reported economic damages from disasters 1980–2015 (CRED 2016b)

The Role of ICL Sendai Partnership

Enhancing international cooperation and the provision of means of implementation to support least developed countries and small islands in developing States in the implementation of the Sendai Framework and, in that context, making bilateral and multilateral development assistance programs risk-informed is essential.

Over the last twenty years, the majority of disasters (90%) have been caused by floods, storms, heatwaves and other weather-related events as outlined in Fig. 1 (CRED 2016a).

Most of these disasters can cause landslides, which in turn cause hundreds of billions of dollars in damage (Fig. 2) and hundreds of thousands of deaths and injuries each year (CRED 2016b). In the US alone, it has been estimated that landslides cause in excess of US\$1 billion in damages on average per year, though that is considered a conservative figure and the real level could be at least double. Given this, it is important to understand the science of landslides: why they occur, what factors trigger them, the geology associated with them, and where they are likely to happen.

The International Consortium on Landslides (ICL) 2015–2025 promotes global understanding and reduction of landslide disaster risk. The Sendai Partnerships will contribute significantly to the implementation of the science and technology roadmap by helping to provide practical solutions and tools, education and capacity building, and communication and public outreach to reduce landslides risks. As such, they will contribute to the implementation of the goals and targets of the Sendai Framework, particularly on understanding disaster risks, including vulnerability and exposure to integrated landslide-tsunami risk.

UNISDR fully support the work of the Sendai Partnerships and the community of practice on landslides risks, and welcomes the 4th World Landslide Forum to be held in 2017 in Slovenia, which aims to strengthen intergovernmental networks and the international programme on landslides.

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