Disaster loss data in monitoring the implementation of the Sendai Framework

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IRDR
Integrated Research on Disaster Risk

> "Access to information is critical to successful disaster risk management. You cannot manage what you cannot measure."
>
> Margareta Wahlström, Former Special Representative of the Secretary-General for Disaster Risk Reduction and Chief of UNISDR (UNISDR, 2012).

POLICY RECOMMENDATIONS

In 2015 three UN Landmark Agreements were adopted: the Sendai Framework for Disaster Risk Reduction 2015–2030, the Sustainable Development Goals (SDGs), and the Agreement. All three must be 'able to monitor and review implementation' calling for 'a data revolution, rigorous accountability mechanisms and renewed global partnerships' (UN, 2015).

The disaster data landscape is a complex one, though information on loss data is rapidly growing. When human, monetary or environmental losses occur as a result of a disaster, extensive loss data are often collected and stored by different organizations, but the thoroughness and accuracy of the data vary from country to country and even among local entities. While many methods do exist, there is no standard that introduces a reasonable level of comparability into the resulting assessment results. This leads to gaps and overlaps in the data, and biases that ultimately affect the quality of research conducted and policies made on the basis of the data.

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Policy recommendations on disaster loss data therefore include:

- Strengthening collaboration between partners in academic, government and disaster management organizations at the global, national and local levels, as well as within the public and private sectors, for monitoring the Sendai Framework and its Global Targets.
- Establishing basic data infrastructure for disaster loss data in developing countries and supporting regional and global cooperation for disaster loss reporting.
- Standardizing approaches for disaster loss data quantification methods and loss data collection systems (i.e. databases) in order to obtain reliable loss estimates that will support higher-level strategic objectivevs of disaster loss analyses (De Groeve et al. 2014).
- Sharing technology and innovations for the common good through the creation of a global network to bring together organizations and experts for providing technical guidelines to ensure that data provided in support of the indicators for the Sendai process is as reliable and usable as possible.
- Identifying critical research gaps and engaging researchers and policy-makers in the development of data tools and algorithms to better capture and evaluate data (IAEG, 2014).
- Creating incentives to leverage resources, innovation and creativity of the private sector in data collection and reporting.
- Promoting the accessibility and exchange of disaster data from multiple data repositories.
- Consulting with relevant agencies and communities, and establishing a disaster data copyright protection and acceptable use policy to ensure the legality and appropriate use of data during disaster mitigation.

Context

Understanding what is currently lost or affected by disasters is a highly complex but essential process if we are to succeed in mitigating the effects of future disasters.

On 2 February 2017, the UN General Assembly adopted Resolution A/71/644 which defines a set of 38 indicators to monitor the following seven global targets of the Sendai Framework:

a) Substantially reduce global disaster mortality by 2030, aiming to lower the average per 100,000 global mortality rate in the decade 2020 – 2030 compared to the period 2005 – 2015;
b) Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020 – 2030 compared to the period 2005–2015;
c) Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030;
d) 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;
e) Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020;
f) Substantially enhance international cooperation involving developing countries through adequate and sustainable support to complement their national actions for implementation of the present Framework by 2030;
g) Substantially increase the availability of, and access to, multi-hazard early warning systems and disaster risk information and assessments to people by 2030.

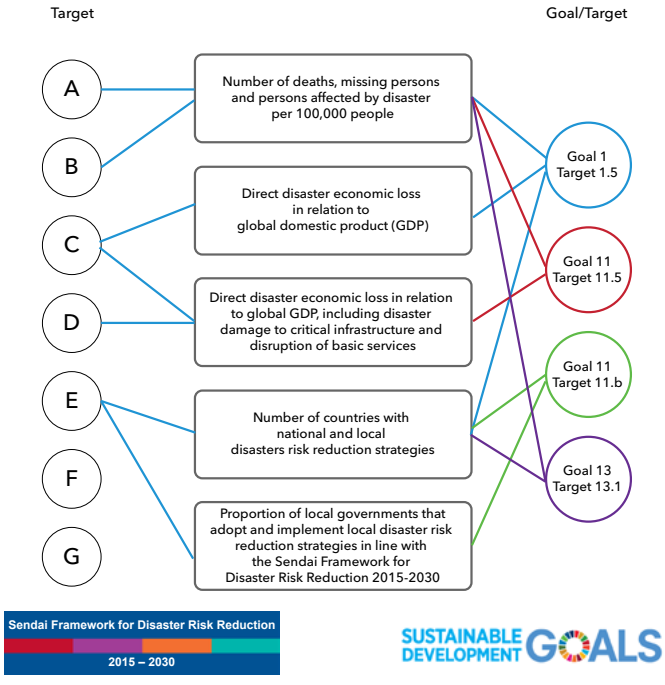

Figure 1 Diagram of how SDGs link to Sendai. Source: UNISDR 2017

Figure 1 illustrates some of the linkages between the SDGs and the Sendai Framework targets.

Key considerations for implementation

Some of the key considerations for implementation on data management include:

- **Agreement on principles and standards for data loss collection, recording and reporting:** There is a need for agreement on common data principles that will help ensure that data provided in support of the indicators for the Sendai process are as reliable and usable as possible. These data principles are an essential foundation to ensure that Sendai reporting is robust. Processes and methods involved in the collection of loss data can represent a complex task, with the involvement of a number of technical and non-technical inputs as well as partners from a range of different disciplines. We need to simplify loss data reporting and define a common language in order to ensure the standardization of loss data collection, recording and reporting across countries. Application of standard taxonomies to loss data in the technical guidance is needed to ensure information is 'useful, feasible, transparent, consistent, precise, verifiable, relevant, complete, timely and accessible' (UN, 2014).

- **Agreement on classifications and taxonomies:** Several different taxonomies for hazards exist, including the IRDR perils classification and Cambridge taxonomy of threats for complex risk management. Among hazard types, only a system for naming individual tropical cyclones has been widely adopted at the international level. Expansion of a system for assigning unique identifiers across multiple hazard types introduces a number of challenges. These include: agreement on an identifier system, creation of internationally recognized mechanisms for identifier generation, procedures for reconciliation of identifiers for events affecting multiple countries and ex-post correction or reconciliation of identifiers for particular events where necessary, designation of the relevant authorities, and adoption of standard operating procedures (Dilley and Grasso, 2016). For example, the seventeenth World Meteorological Congress adopted Resolution 9 (Cg-17) noting the need for the systematic characterization and cataloguing of extreme weather and climate events in a form that allows data on losses and damage to be cross-referenced to these phenomena (WMO, 2015).

- **Agreement on data exchange and standards databases:** According to a UNDP assessment (2013), more than 60 disaster loss and damage databases are known to exist at national and regional levels (UNDP, 2013). At the global level, additional databases include EM-DAT, NatCatSERVICE, Desinventar and Sigma. But these databases face several challenges, such as on standard data collection processes, missing data, and inconsistent economic valuations of physical damages and losses. Work also remains to be done to integrate these global, regional and country-level resources into an authoritative evidence base for scientific research and policy implementation. The detailed data on physical losses and damages to the assets in affected sectors could also be standardized to a greater degree. Greater standardization in the cataloguing systems for managing these data and computing economic equivalencies would promote data comparability and facilitate the cross-referencing of hazard data with data on associated losses and damage. Where disaggregated data is provided, shared categories and definitions are needed. Controlled vocabularies are an essential component of technical data standards, as they provide a precise and agreed definition of what is being measured or counted.

- **Comparability of disaster loss data:** At the present time, not all countries systematically collect disaster loss and damage data, and even fewer integrate these data into official national statistics. Given that the measurement of the Sendai Framework Global Targets requires a comparison of average losses between 2020–2030 with 2005–2015, many countries will even have to undertake archival work to recover records of disaster loss and damage since 2005 and then begin the systematic recording of all new loss.

Key considerations for monitoring progress

There is currently no global standard for disaster loss data that will allow us to measure progress towards the agreed global targets. However, a number of initiatives are currently working on developing standards, for example under the auspices of the EC Joint Research Centre (JRC) and Integrated Research on Disaster Reduction (IRDR) Data Group (IRDR, 2014). An open-ended intergovernmental expert working group (OIEWG) comprised of stakeholders from Member States, NGOs, private sector, science and technology, etc. was formed to work on defining a set of indicators and methods that would allow the measurement of the seven targets and measure success in achieving the Sendai Framework's main goal, a substantial reduction of risk and losses due to disasters. It is important to emphasize that no indicator will provide an absolutely precise, accurate and exhaustive measure of mortality losses. It is not possible to remove a certain level of uncertainty or inaccuracy from mortality loss estimations, for which the sourcing of data is subject to the legal procedures and timeframe

criteria of a specific country, as well as the exhaustiveness of data collection. In this sense, the mortality estimated is always an approximate value (a "proxy"). In the absence of an agreed international standard, a set of minimum standards for disaster loss and damage data could be adopted that would contribute to the data quality and global comparability required to be able to measure progress against the Global Targets.

In order to support Member States in the operationalization of the global indicators to measure progress towards the achievement of the global targets of the Sendai Framework the key considerations for monitoring progress include:

- Providing Member States with technical support, upon request, to conduct a review of data readiness with respect to the indicators in order to establish a baseline for monitoring and prepare for the first biennial cycle of review of the Sendai Framework;
- Developing technical guidance material for the testing and roll-out of the indicators and the web-based monitoring system of the Sendai Framework monitoring mechanism.
- Close coordination with national and regional statistics bodies to adopt disaster loss and damage data will have to comply with standards for official statistics.
- Systematic assessment and measure of disaster loss data at community level through national standardization.

Our contribution to the solutions

Disaster Loss Data (DATA) project of IRDR

IRDR's Disaster Loss Data (DATA) project is designed to support information dissemination, networking and collaboration with a growing network of stakeholders from different disciplines and sectors to study issues related to the collection, storage and dissemination of disaster loss data.

The DATA project:

- Aims to be a reference point for sharing DATA news, proposals, results, and ideas.
- Brings together loss data stakeholders and develops and utilizes synergies.
- Identifies the quality of existing data and what data are needed to improve disaster risk management.
- Develops recognized standards or protocols to reduce uncertainty in the data.

CODATA Task Group Linked Open Data for Global Disaster Risk Research (LODGD)

This group was established by the ICSU Committee on Data for Science and Technology (CODATA) to study the mechanism for connecting data to enable easier and faster recovery and access. Since 2012 LODGD has focused on addressing the scientific questions, the technical challenges and the best practices of disaster data management. Data science practices have been used to merge with disaster research and response.

UNISDR/IRDR/PHE workshop on Disaster Loss Data

This event took place in February 2017 at the Royal Society in London, convened following the work completed by the OIEWG on Terminology and Indicators Relating to Disaster Risk Reduction and sought to further develop the loss data technical guidance notes concerning the Global Targets. The discussions at the workshop resulted in a number of proposals for changes and revisions within the technical guidance notes. The UNISDR Secretariat is to review all proposals and will ensure that all changes made to these notes are fully aligned with the discussions of the OIEWG, and in full compliance with General Assembly Resolution A/71/644.

Rapid damage assessment tools

Damage and loss estimation is often difficult immediately after a natural disaster since data and information are not available. During the Kaikoura earthquake, IRDR's Disaster Loss DATA project and the CODATA Task Group LODGD worked together with environmental and engineering consultancy Tonkin+Taylor in New Zealand to provide TripleSat satellite images of the affected Hurunui District. Geo-spatial information was developed for the New Zealand Earthquake Commission (EQC) on the damage caused, and was made available through a web-based viewer to all government agencies, response and recovery agencies, engineers and researchers, thereby informing first response and mitigation measures (CODATA, 2017).

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