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POLICY BRIEF:
USING UNDRR/ISC HAZARD INFORMATION PROFILES TO MANAGE RISK AND IMPLEMENT THE SENDAI FRAMEWORK FOR DISASTER RISK REDUCTION

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INTRODUCTION

Following extensive scientific consultation, the United Nations Office for Disaster Risk Reduction (UNDRR) and the International Science Council (ISC) published in 2020 the UNDRR/ISC Hazard Definition and Classification Review – Technical Report[1]. This was followed by a supplement containing 302 hazard information profiles (HIPs), published in 2021.

The UNDRR/ISC hazard information profiles[2] provide a common set of hazard definitions and other information relevant for informing the strategies and actions of governments and stakeholders, and for managing the risks associated with a wide range of hazards. They can be used whenever and wherever assessment, planning and action related to hazards – as well as exposure, vulnerability and capacities – are being considered. As such, they relate to the design, implementation and monitoring of disaster risk reduction and risk-informed investments at all levels – local, national, regional and global.

The science-based structure of the HIPs serves to avoid confusion and duplication in the classification of hazards. It also promotes up-to-date information derived from the 'data revolution, rigorous accountability mechanisms and renewed global partnerships'. The HIPs support the implementation of not only the Sendai Framework for Disaster Risk Reduction 2015–2030, but also the Sustainable Development Goals of Agenda 2030, the Paris Agreement on climate change, the Addis Ababa Action Agenda on sustainable financing, International Health Regulations (2005), and other relevant global, national and regional frameworks.

[1] https://www.undrr.org/publication/hazard-definition-and-classification-review
[2] https://www.undrr.org/publication/hazard-information-profiles-supplement-undrr-isc-hazard-definition-classification

KEY MESSAGES

1

The COVID-19 pandemic has shown the value of the all-hazards approach called for in the Sendai Framework for Disaster Risk Reduction and supporting the Sustainable Development Goals of Agenda 2030, the Paris Agreement on climate change, the International Health Regulations (2005) and other related global and regional frameworks.

2

UNDRR/ISC hazard information profiles provide a comprehensive compilation of hazard information and definitions. This supports the integration of knowledge and better governance of risks across all hazard types to reduce risk through prevention, preparedness, response and recovery

3

There is an urgent need for a more coherent and collaborative approach to defining and monitoring hazards and their interlinkages in order to support all aspects of disaster risk reduction, including the development and implementation of assessments, strategies, management measures, and monitoring and reporting.

4

The UNDRR/ISC hazard information profiles provide evidence-informed guidance to support the standardization of hazard definitions at global, national and local levels, and efforts to increase the interoperability and utility of data systems.

COMPILING THE UNDRR/ISC HAZARD INFORMATION PROFILES

UNDRR and ISC compiled 302 hazard information profiles, organized into eight hazard types. Each hazard type is further divided by cluster type and covers a variable number of specific hazards (see Figure 1).

Experts from across the science community drew on a number of sources from different sectors and industry groups to determine which hazards should be included in the review and developed as UNDRR/ISC hazard information profiles. They noted that the original sources were often replicative and inconsistent, and did not provide a full picture of hazards experienced by communities around the world. The experts consulted widely to resolve a number of complicated issues – such as the complexity of the interplay between hazards and their cascading effects – before achieving consensus on an ontology for organizing the hazards and compiling the HIPs.

Each UNDRR/ISC hazard information profile contains the name of the specific hazard, a reference number, a definition, selected annotations, key references and the name of the UN agency or organization that issues guidance relating to the hazard (Figure 2). An additional output is a compilation of existing information that relates to the wider spectrum of hazards identified in the Sendai Framework and the other 2015 landmark United Nations agreements.

Figure 1: UNDRR/ISC hazard information profiles according to eight hazard types

Note: CBRNE = chemical, biological, radiological, nuclear and high-yield explosives

Source: Reproduced from Fahad S Malik and Anna Schwappach, UK Health Security Agency

The TWG developed a common template for each hazard information profile comprising four sections:

a) **Name and Reference**

This section includes a reference number (assigned for the purpose of information management for this project), hazard type, cluster type and name of the specific hazard.

b) **Definition**

A definition of the hazard, sourced from an authoritative source (such as the UN agency responsible for providing guidance on the hazard), that reflects scientific consensus on the issues addressed, and that is of broad international relevance. For hazards where no UN level definition exists, definitions were extracted, and when necessary adapted from the most accepted and up-to date academic and scientific sources. The reference(s) for the definition is cited.

c) **Annotations**

This section comprises several sub-sections:

- Possible synonyms or alternative denominations to enable usage of the profiles in relational databases. Equivalents in languages other than English have not been systematically proposed but would be helpful for the uptake and use of the HIPs worldwide.
- Additional description elements which expand on the primary definition of the hazard.
- Where relevant and available, globally used metrics and numeric limits.
- References to key relevant UN conventions or multilateral treaties.
- Examples of drivers, outcomes and risk management practices or processes providing more concrete information on the contexts and possible impacts of the hazard.
- A set of key references from publicly available scientific and institutional sources to support facts and statements made in the HIPs.

d) **Coordination Agency or Organisation**

The TWG drew on their expertise and networks to identify the UN or international organisations that provide technical guidance on the hazard under consideration. The TWG approached these organisations to identify relevant resources and to identify experts to lead or contribute to the development and review of each hazard information profile for the purpose of this project. For many HIPs, this was a clear process but for some HIPs, a coordinating agency or organisation is still to be identified.

Figure 2: Hazard information profile template

Source: Hazard Information Profiles: Supplement to UNDRR-ISC Hazard Definition & Classification Review – Technical Report 2021, page 21

USING THE UNDRR/ISC HAZARD INFORMATION PROFILES

The UNDRR/ISC technical report included recommendations on using the UNDRR/ISC hazard information profiles. It stated that the profiles should be used to: actively engage policy-makers and scientists in the planning and implementation of evidence-based national risk assessment processes; develop multi-hazard information systems; and plan and implement actions aimed at managing risks posed by emergencies and disasters, which are often cascading and complex.

The UNDRR/ISC hazard information profiles will have particular value in multidisciplinary and multisectoral work – as they allow for greater alignment and consistency of hazard definitions within and across sectors. UNDRR/ISC recommends that further work should be carried out to operationalize parameters for exposure, vulnerability and capacities, as well as to create a process for the regular review and update of the profiles.

The UNDRR/ISC hazard information profiles are already being applied by many organizations, as exemplified in the following case studies.

CASE STUDY: WORLD METEOROLOGICAL ORGANIZATION CATALOGUING OF HAZARDOUS EVENTS

The World Meteorology Organization (WMO) is currently implementing a new methodology for cataloguing hazardous events (WMO-CHE). This will provide essential inputs for identifying, reducing and transferring risk, as well as for tracking global policy indicators such as the Sustainable Development Goals, the Paris Agreement and the Sendai Framework.

The methodology uses modern database methods that are hierarchy-free (no tree structure to store data) and facilitates flexible analysis. It centres on uniquely identifying and recording hazardous meteorological, climate, water, and space weather events, and other related environmental phenomena. Related events are grouped and linked together, thereby reducing the risk of double accounting.

WMO will use material developed in the UNDRR/ISC hazard information profiles to begin to identify hazardous events. This will help improve WMO's understanding of complex and cascading events, and trends in frequency, severity and distribution, and will enable the organization to strengthen early warning systems. UNDRR and WMO are also planning to link the WMO-CHE mechanism with a UNDRR-supported disaster loss accounting system (currently www.desinventar.net). This will extend the data value chain used in disaster risk management from observations of natural hazards towards a system that enables a numerical assessment of associated cascading impacts.

CASE STUDY: UNITED NATIONS INTER-AGENCY EXPERT GROUP ON DISASTER-RELATED STATISTICS

The United Nations Inter-Agency Expert Group on Disaster-related Statistics (IAEG-DRS) was established under the aegis of the UN Statistical Commission. This commission is coordinating the development of a global framework on disaster-related statistics, while also bringing together national statistical and disaster management offices in order to strengthen the data ecosystem and standards for disaster management in individual countries. IAEG-DRS uses hazard definitions and classifications from the UNDRR/ISC hazard information profiles to provide an important layer of data standardization that will recommend to governments the use of the reviewed classification system for monitoring and reporting in disaster risk reduction, and thus to gradually integrate it into databases and reporting systems.

CASE STUDY: UNDRR-WMO CENTRE OF EXCELLENCE FOR DISASTER AND CLIMATE RESILIENCE

This centre of excellence was established on 13 October 2021 – International Day for Disaster Risk Reduction. It convenes climate and disaster through practical leadership on how to apply science to disaster risk services; joint research; policies; and capacity strengthening to achieve comprehensive disaster and climate risk management at the global, regional, nation and sub-national levels.

One goal of the centre is to increase understanding of climate and disaster risks in order to inform development and humanitarian action. The UNDRR/ISC hazard information profiles will provide a basis for the standardization of hazard names and definitions, and will enable a more systematic understanding of hazards and their impacts.

CASE STUDY: UN WOMEN'S DATA COLLECTION

UN Women is currently helping individual countries to fill data gaps that relate to gender in environmental statistics, including through the use of recently developed innovative tools. For instance, by integrating geospatial information and survey data, the organization has generated evidence on the connections between climate change and gender outcomes.

Furthermore, UN Women supports national statistics offices by collecting data on the gender–environment nexus through a model questionnaire on gender and the environment. This questionnaire was developed in consultation with the Food and Agriculture Organization of the United Nations, the International Labour Organization, the International Union for Conservation of Nature, UNDRR, the United Nations Environment Programme and the United Nations Economic and Social Commission for Asia and the Pacific.

The questionnaire's modules on climate change and disasters utilize UNDRR/ISC hazard information profiles. Using these profiles, respondents are asked to identify whether they have witnessed a series of hazards and, if so, to answer a series of questions relating to each hazard. So far, nationally representative data on the gender–environment nexus have been collected using this questionnaire in Mongolia and Bangladesh, and surveys in Samoa and Tonga are underway. Many other countries have expressed interest in implementing the surveys in the coming year.

CASE STUDY: WORLD HEALTH ORGANIZATION FRAMEWORK FOR HEALTH EMERGENCY AND DISASTER RISK MANAGEMENT

Recognizing the wide range of hazards to which communities are exposed, the World Health Organization (WHO) Health Emergency and Disaster Risk Management Framework and Strategic Toolkit for Assessing Risks include the WHO classification of hazards. This classification was a key input for identifying the hazards to be included in the UNDRR/ISC hazard definition and classification review.

The revision of WHO's classification of hazards now underway aligns with the UNDRR/ISC hazard information profiles. Both provide a common understanding of how hazards affect public health and enable whole-of-society action such as: all-hazards risk assessment; multi-hazard early warning systems; critical infrastructure protection; emergency preparedness and response; and delivery of health services to save lives and reduce injuries, illnesses and other health impacts caused by emergencies and disasters.

CASE STUDY: CASE STUDY: WORLD METEOROLOGICAL ORGANIZATION'S HIGH-IMPACT WEATHER PROJECT

WMO's High Impact Weather Project (HIWeather) is a ten-year activity within the World Weather Research Programme. It aims to develop and promote more effective weather-related warnings by addressing weaknesses in the whole warning cycle, particularly in the linkages between the different disciplines and institutions that are involved.

A core component of HIWeather is its 'value chain' project, which attempts comparative analysis of the behaviour and performance of real warning systems in real disasters. In this project, available evidence is synthesized and mapped on to a standard template which captures the performance of each stage of the warning chain – from weather forecast to hazard forecast, impact forecast, warning and response.

As well as the accuracy of information produced at each stage, the template looks for data on the effectiveness of communication between these stages: in order for HIWeather to move from data gathering to analysis, it is essential that a common language is used throughout the warning cycle. For the weather and hazard stages, HIWeather will rely on WMO-CHE, so as to ensure that hazards are standardized according to the classification of hazard information profiles developed by UNDRR/ISC.

RECOMMENDATIONS

This policy brief identifies urgent actions for national and local governments and UN and academic partners. These are summarized in the following recommendations:

1. Engage with those working in disaster risk reduction, emergency management, climate change and sustainable development, in order to review the UNDRR/ISC hazard information profiles and ensure that they continue to reflect the needs of those involved.
2. Use the UNDRR/ISC hazard information profiles to engage policy-makers, scientists and practitioners in evidence-informed national risk assessments, disaster risk reduction, risk-informed sustainable development, and other actions aimed at managing the risks posed by emergencies and disasters.
3. Embed the UNDRR/ISC hazard information profiles in national and local risk and capacity assessments, planning, exercise simulations, service delivery, infrastructure development, community mobilization, education, monitoring and evaluation, and other forms of development.
4. Collaborate with UN agencies and other partners, including the scientific community, on identifying hazards in order to regularly review and update the UNDRR/ISC hazard information profiles, and to integrate the latest scientific evidence and lessons identified from using these profiles.
5. Using the UNDRR/ISC hazard information profiles, investigate direct and indirect linkages in order to better identify and understand cascading and complex hazards and risks.

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The International Science Council (ISC) works at the global level to catalyse and convene scientific expertise, advice, and influence on issues of major concern to both science and society. The ISC has a growing global membership that brings together over 220 organizations, including international scientific unions and associations from the natural and social sciences, and national and regional scientific organizations such as academies and research councils. It is the largest international non-governmental science organization of its kind.

The ISC coordinates the Scientific and Technological Community Major Group for the Sendai Framework for Disaster Risk Reduction, aimed at strengthening the input from the scientific community into disaster risk reduction processes in the multilateral space and at advancing a strong science-policy interface for an ambitious and integrated approach to achieving risk-informed development.

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