UNDRR/ISC Hazard Information Profiles: usable, useful and used tool for standardizing hazard information

Teresa OLIVEIRA, Open University in Lisbon, Portugal, member of the CEAUL, Chair of ISI Committee on Risk Analysis

On behalf of Virginia Murray, Chair of the Steering Group, ISC and our many partners

30 October 2024 | 4th Expert Forum on Disaster Related Statistics I

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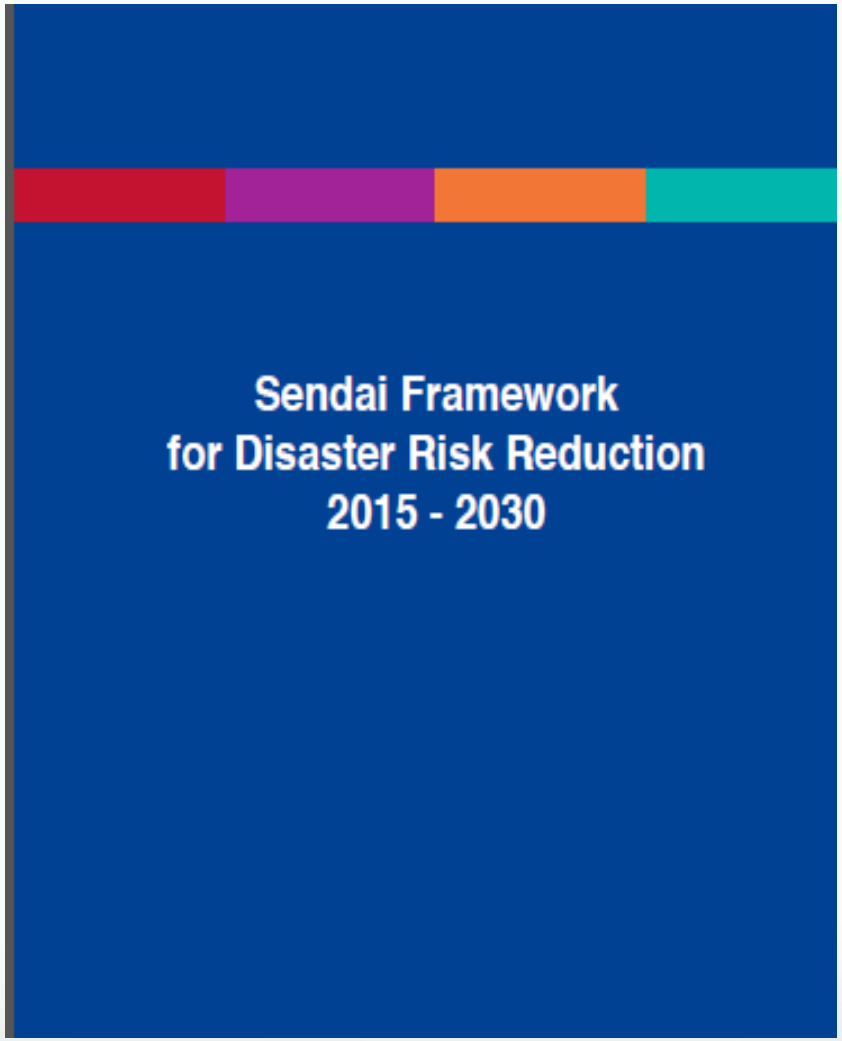
UN Office for Disaster Risk Reduction

AbERTA
www.uab.pt

CEAUL
Centro de Estatística e Aplicações
Universidade de Lisboa

International Statistical Institute
Committee on Risk Analysis

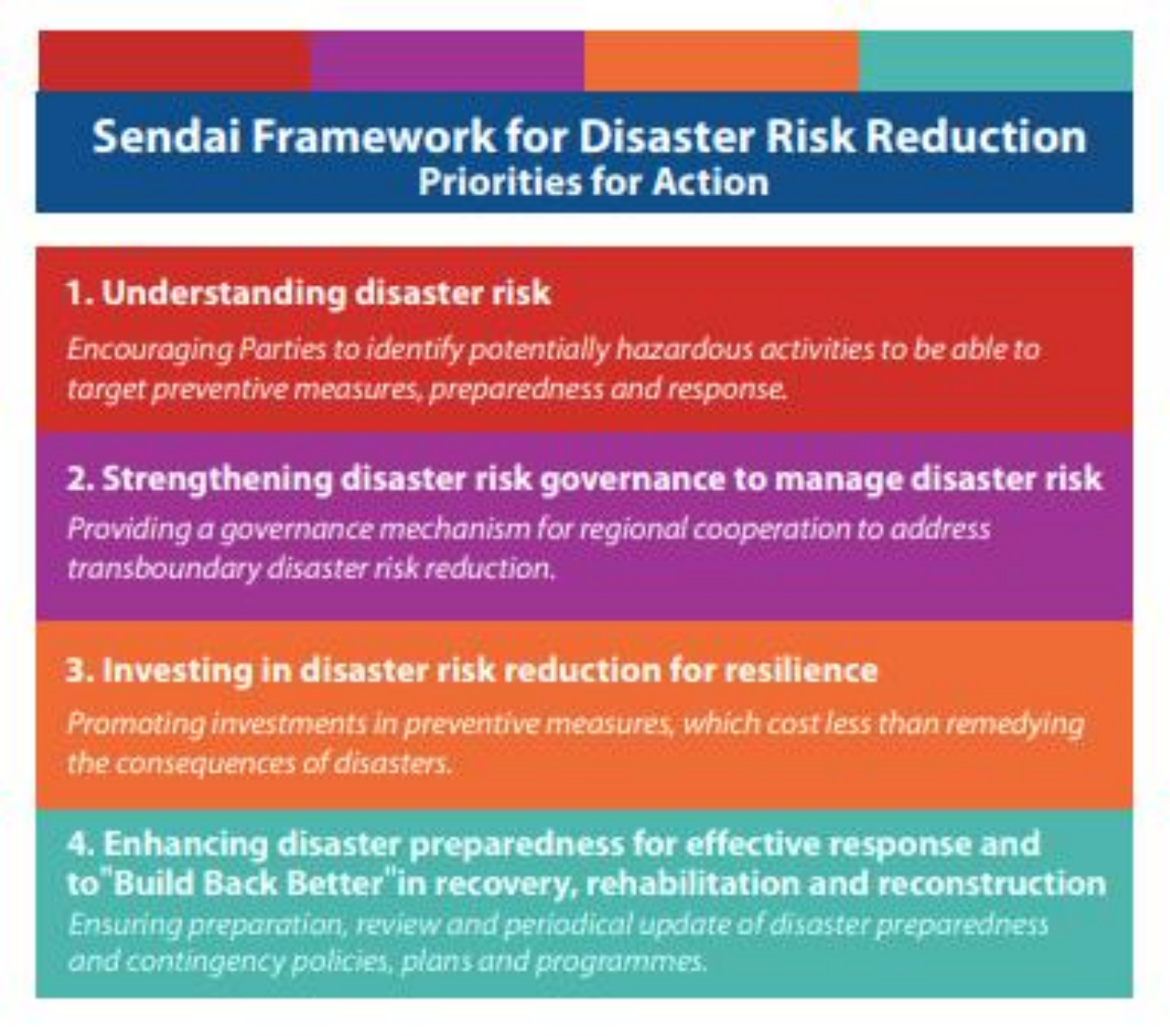
THE GENERAL CONTEXT



- The Sendai Framework for DRR 2015-2030 was adopted by 187 countries in 2015 during the 3rd Global Platform for DRR in Sendai, Japan.
- It replaced the Hyogo Framework for Action 2005-2015

THE GENERAL CONTEXT

THE GENERAL CONTEXT



THE DEVELOPMENT OF THE HIPs

The Sendai Framework specifically mentions the need

To strengthen technical and scientific capacity to capitalize on and consolidate existing knowledge and to develop and apply methodologies and models **to assess disaster risks, vulnerabilities and exposure to all hazards**;

(paragraph 24 j)

- To address this need, scientists decided to review the existing lists of hazards to check they met the needs of users.
- This effort, supported by UNDRR and ISC bringing together hundreds of experts, resulted in two outcomes

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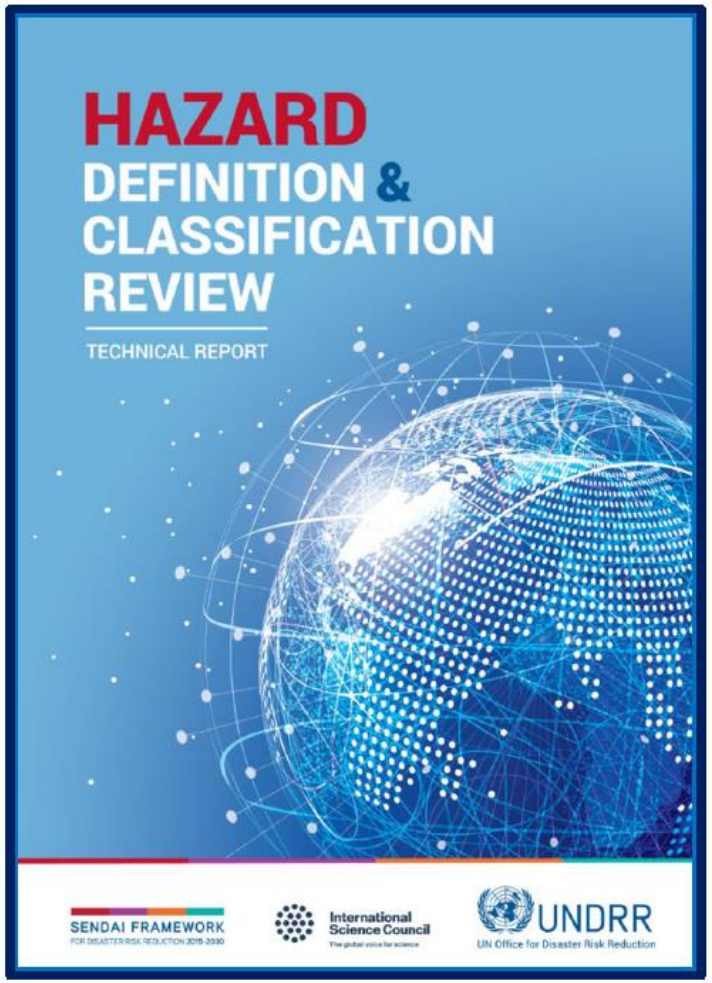
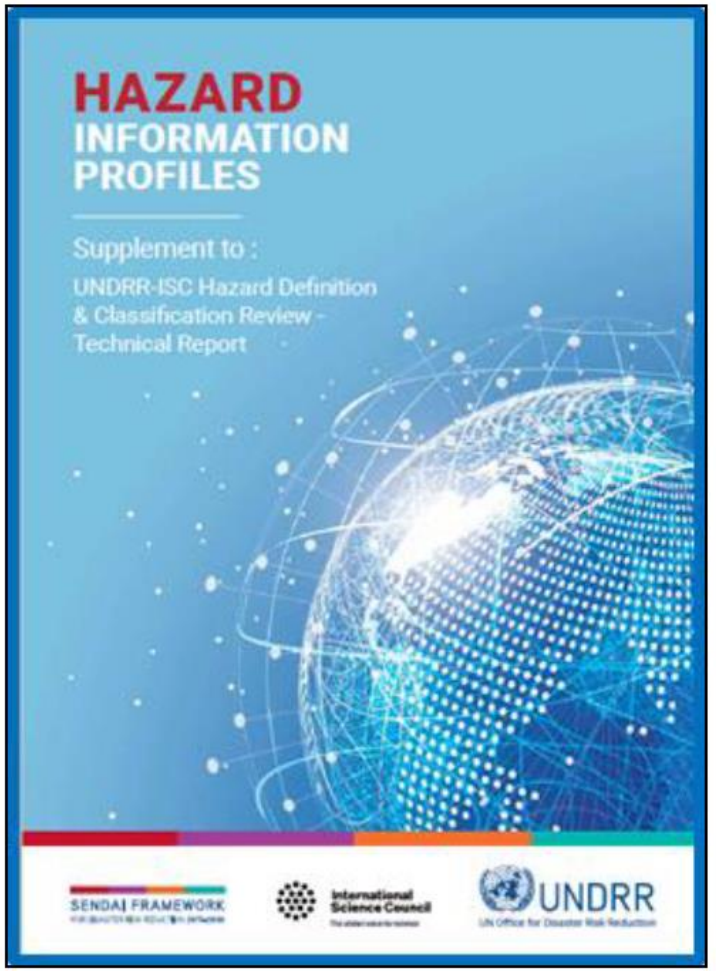
International Science Council



UNDRR / ISC Hazard Definition and Classification Review
Technical Report
July 2020



UNDRR / ISC Hazard Information Profiles Supplement to UNDRR / ISC Hazard Definition and Classification Review
October 2021

UNDRR
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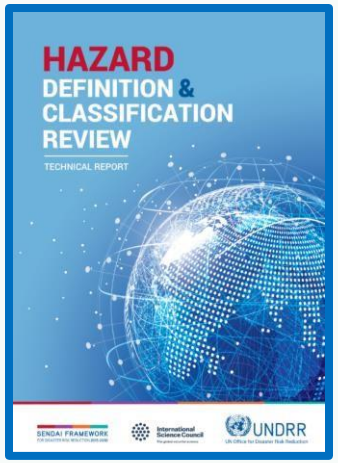

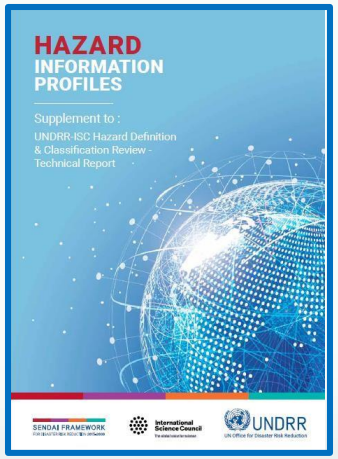

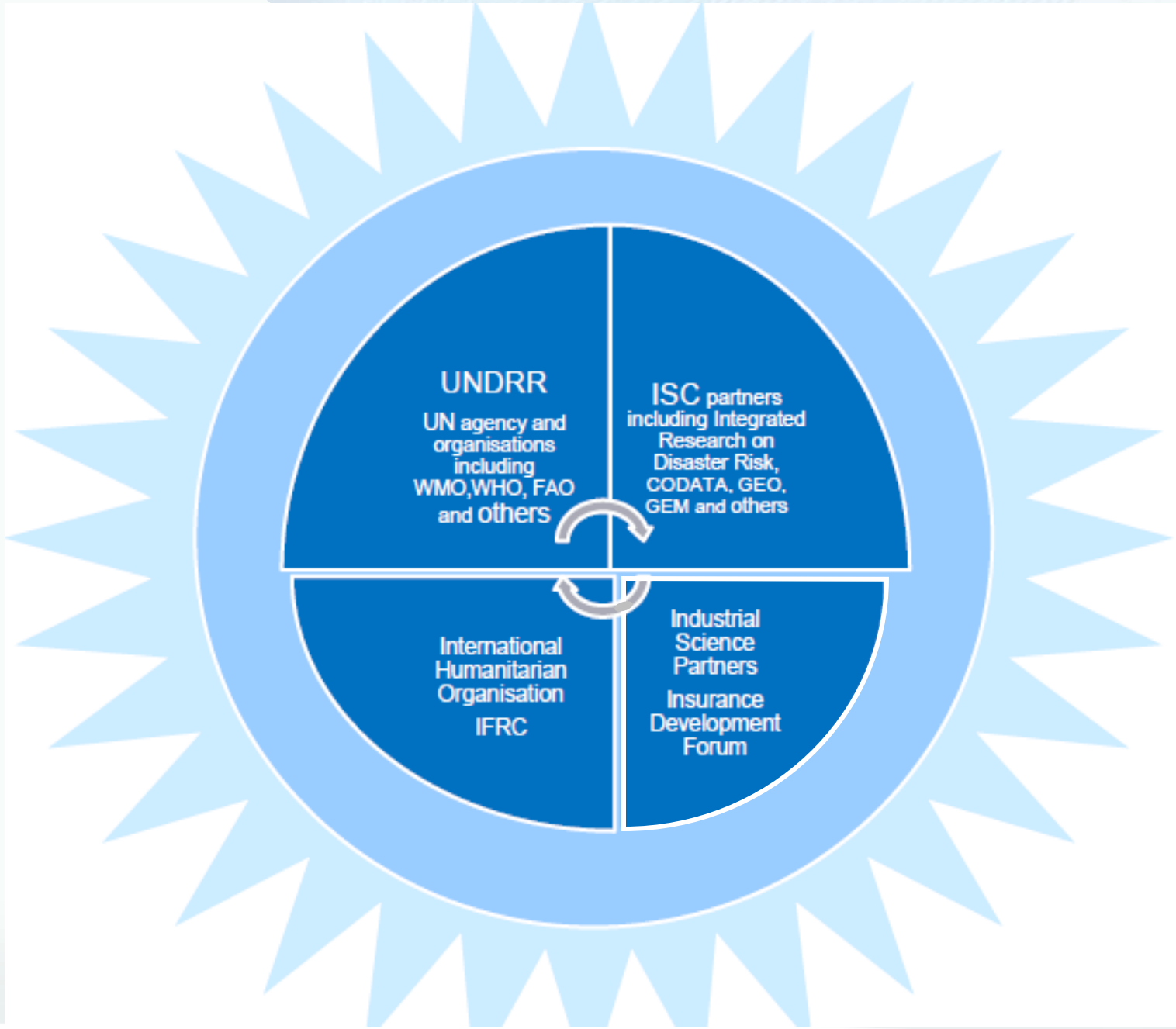

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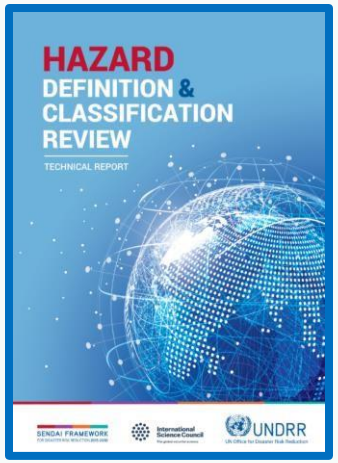
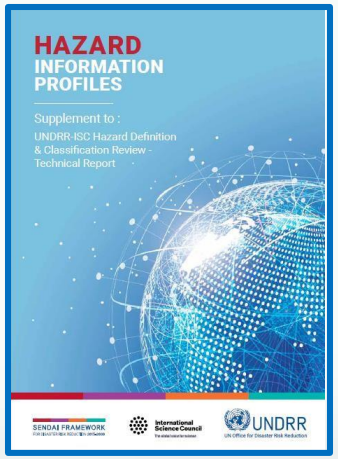




WHAT ARE THE HIPs?

The HIPs are concise documents (1-4 pages) providing information on hazards.

The HIPs are organized in different sections:

- Definition and associated reference
- Annotation
  - Synonyms
  - Additional Scientific Description
  - Metrics and numeric limits
  - Key relevant UN convention / multilateral treaty
  - Examples of drivers, outcomes and risk management
- References

MH0027 / METEOROLOGICAL AND HYDROLOGICAL / Marine

Storm Surge

Definition

A storm surge reflects the difference between the actual water level under the influence of a meteorological disturbance (storm tide) and the level which would have occurred in the absence of the meteorological disturbance (i.e., astronomical tide) (WMO, 2008, 2011, 2017).

References

WMO, 2008. Technical Regulations, Volume III: Hydrology, WMO No. 49. World Meteorological Organization (WMO). www.wmo.int/pages/prog/hwrp/publications/technical_regulations/49_III_E_supplement1.pdf Accessed 26 November 2019.

WMO, 2011. Guide to Storm Surge Forecasting, WMO No. 1076. World Meteorological Organization (WMO). https://library.wmo.int/doc_num.php?explnum_id=7747 Accessed 12 August 2020.

WMO, 2017. Regional Association IV – Hurricane Operational Plan for North America, Central America and the Caribbean, WMO-No. 1163. World Meteorological Organization (WMO). https://library.wmo.int/doc_num.php?explnum_id=3781 Accessed on 26 November 2019.

Annotations

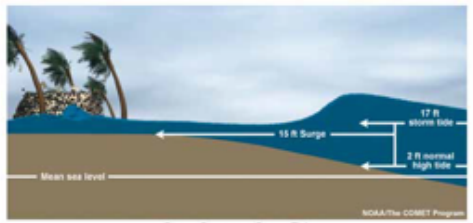
Synonyms

Not identified.

Additional scientific description

A storm surge is the rise in seawater level caused solely by a storm. It is the abnormal rise in seawater level during a storm, measured as the height of the water above the normal predicted astronomical tide. The surge is caused primarily by a storm's winds pushing water onshore. The amplitude of the storm surge at any given location depends on the orientation of the coast-line with the storm track, the intensity, size, and speed of the storm, and the local bathymetry (NOAA, 2019a). This is illustrated in the graphic below (NOAA, 2019a).

A storm tide is the water level that results from the combination of the storm surge and the normal (astronomical) tide. A 3-metre (9.8 feet) storm surge on top of a high tide that is 2 metres (6.6 feet) above the mean sea level will produce a storm tide that is 5 metres (16.4 feet) above mean sea level. Storm surge should not be confused with storm tide. This rise in water level can cause extreme flooding in coastal areas, resulting from storm tides reaching up to 6 meters (20 feet) or more in some cases (NOAA, 2019b).



Storm Surge vs. Storm Tide

Hazard Information Profiles - Supplement to UNDRR-ISC Hazard Definition & Classification Review - September 2021

Metrics and numeric limits

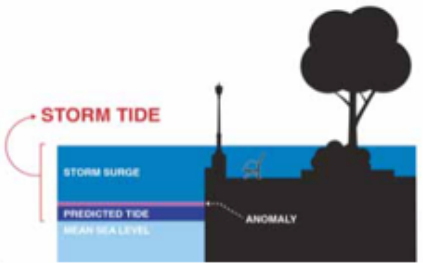
Not available.

Key relevant UN convention / multilateral treaty

Not available.

Examples of drivers, outcomes and risk management

On top of a storm tide are pounding waves generated by the powerful winds. The area of seawater flooding may extend along the coast for over 100 km, with water pushing several kilometres inland if the land is low lying. The combined effects of the storm tide and surface waves can destroy buildings, wash away roads and run ships aground (Australian Government, 2020).



Examples of National Alerting Parameters include storm surge warning issued in Canada (Government of Canada, 2019) and an Advisory for storm surge watch/warning issued by the World Meteorological Organization (WMO, 2017).

References

Australian Government, 2020. Storm Surge. Bureau of Meteorology. www.bom.gov.au/cyclone/tropical-cyclone-knowledge-centre/understanding/storm-surge Accessed 13 October 2020.

Government of Canada, 2019. Storm Surge: Criteria for Public Weather Alerts. www.canada.ca/en/environment-climate-change/services/types-weather-forecasts-use/public/criteria-alerts.html#stormSurge Accessed 26 November 2019.

NOAA, 2019a. What is storm surge? National Ocean Service, National Oceanic and Atmospheric Administration (NOAA). https://oceanservice.noaa.gov/facts/stormsurge-stormtide.html Accessed 26 November 2019.

NOAA, 2019b. Storm Surge Overview. National Hurricane Center and Central Pacific Hurricane Center, National Oceanic and Atmospheric Administration (NOAA). www.nhc.noaa.gov/surge

WMO, 2017. Regional Association IV - Hurricane Operational Plan for North America, Central America and the Caribbean, WMO-No. 1163. World Meteorological Organization (WMO). https://library.wmo.int/doc_num.php?explnum_id=3781 Accessed 26 November 2019.

Coordinating agency or organisation

World Meteorological Organization (WMO).

MH0004 / METEOR(

Coastal

Definition

Coastal flooc high winds c the raising of configuratior up of water i and retardinç

Reference

WMO, 2011. Mani Organization (WM WMO%201072_e

Annotations

Synonyms

Storm Surge, Coastal

Additional scientific

Major deltas such as t sensitive area is the s takes place near the n flooding over and nea occasionally severe c

Coastal flooding is lar flooding (Dawson et a the land increasing th

Seawater can flood th

- *Direct flooding*: the a dune system.
- *Overtopping of a ba* during storm or high water flows over the significant amounts
- *Breaching of a barri* coasts exposed to l extend inland and fl

Metrics and numeri

The extent and magni the topography of the (Bell et al., 2017).

ET0001 / EXTRATEI

Airburst

Definition

An airburst is bomb or larg

Reference

Lexico Dictionary 2019.

Annotations

Synonyms

Air-blast, Fireballs, Bo

Additional scientific

Meteoroids are object meteoroids enter Eart stars' are called mete (NASA, no date).

Research has revealed atmosphere, air that w oid significantly. In es and Melosh, 2017; Wil

The hazardous effects simulations of airburs dynamics and radiatic radiation capable of ig dangerous effects of of 2013 and the Tungu

On 15 February 2013, hit by the resulting me buildings in the region internet by news orga tonnes and measured compared to other obj of TNT (about 20 to 3(real hazards associat

In the early morning o Siberia), devastated 2 number of trees and b bright as the sun". Sei over much of Eurasia. different aspects of th

Metrics and numeri

Not applicable.

GH0001 / GEOHAZA

Earthqua

Definition

Earthquake i the resulting slip, or by vo in the Earth (

Reference

USGS, no date. E usgs.gov/learn/g

Annotations

Synonyms

Earth tremor.

Additional scientific

Earthquake hazards a are those phenomena surface rupture (and f hazards, and include t

Metrics and numeri

Earthquake magnitud Kanamori, 1979) scali and unlike other scale of 1 magnitude unit (i. measurements, and a

Earthquakes of magni primary and secondar cause damage to vuln earthquake of a given with local soil conditic

There are many differ measures, like the Mo Medvedev-Sponheuer severity of an earthqu Modified Mercalli inte at VI, although this va XI and XII are no longe clear that many of the other factors that wou

Some of the other qua hazard and risk produ for measuring the effe Geological Survey (US

EN0005 / ENVIRON

Soil Deg

Definition

Soil degrada diminished c its beneficia

Reference

FAO, 2020. FAO S Nations (FAO). w

Annotations

Synonyms

None identified.

Additional scientific

Soil degradation cons to highly degraded. Fc afflicted by poverty ar immediate actions, es food insecurity in the

Soil is an essential co and climate in the cas ecosystems. Degrade soil in its ecosystem (

Soil degradation is the industrial or urban pur for all terrestrial life. A ment, 2019).

Soil degradation is the soil fertility, and struc cals, pollutants or exc erosion; salinity (inclu structure decline (incl of Planning, Industry a

Metrics and numeri

12 million hectares of content lower than 0.8 100 times in steep slo 50% in Burkina Faso a for 1200 families (FAC

Key relevant UN cor

Land Degradation Ass

CH0002 / CHEMICA

Carbon M

Definition

Carbon mon to humans a 1999).

Reference

WHO, 1999. Envir Programme on C publications/ehc,

Annotations

Synonyms

None.

Additional scientific

Carbon monoxide (CC tasteless gas that is p readily with haemoglc Carbon monoxide exp number of deaths anr

It is a product of the i biotransformation of fects can begin to occ monoxide are largely the blood (WHO, 1999

The total annual globa tonnes, of which abou carbon monoxide orig these emissions are p engines. Other comm Petroleum-derived en biological sources, su urban areas. In indoo appliances (e.g., wood 2000).

Metrics and numeri

Indoor air: 100 mg/m ppm) for 24 hours (W

Emergency response Guideline Values for A

Key relevant UN cor

Not identified.

BI0010 / BIOLOGIC

Antimicr

Definition

Antimicrobia persist in the relative to th

Reference

FAO, 2011. Guide Food and Agricul www.fao.org/fao pace.fao.org%25 Accessed 26 Oct

Annotations

Synonyms

Not identified.

Notes: In some cases Antibiotic resistance bial resistance relates of agents (antibiotics,

Antimicrobial resistar stances present in fo risk and may contribu

Additional scientific

Antimicrobial resistar proliferate in concent to the organism or otl ment but has been ex

Microorganisms in fo production (terrestria in the food chain is a resistance genes. Wh illness, and in cases v national and internati

Data to support risk a antimicrobial resistar increase from 89 repo ing to the World Healt chain (WHO, 2015a).

In summary antimicro from animal, clinical, deaths each year rela

TL0007 / TECHNOL

Structura

Definition

Structural fa in many of th stability of th

Reference

Rossetto, T., 2013 Springer. link.spri November 2019.

Annotations

Synonyms

Structural collapse, St

Additional scientific

Structural failure affe and pipelines. This ex by the National Institu to a chain reaction tha collapse have been re

Metrics and numeri

The United Nations Ec codes, both members

Many countries have sion, 2020), Canadian 2018).

Key relevant UN cor

The 1954 Hague Conv times of peace, requir a structure and fire (U

The International Labo

The Sendai Framewor prevent new and redu disruption of basic se 2030 (UNDRR, 2015)

Examples of drivers

The drivers of structu materials, inspection these drivers (Almarw

Three summary exam

SO0006 / SOCIETAL / Behavioural

Violence

Definition

Violence refers to the intentional or unintentional use of force whether physical or psychological, threatened or actual, against an individual, oneself, or against a group of people, a community, or a government. Violence can either be targeted or indiscriminate, motivated by certain aims, including political, religious, social, economic, ethnic, racial, or gender-based, or unintentional and can be initiated with the aim to directly or indirectly inflict harm, injury or death (Krug et al., 2002). Armed as well as non-armed forms of violence can occur both in conflict and non-conflict settings. Violence has been explicitly identified as a significant public health problem (Rutherford et al., 2007).

References

Krug, E.G., L.L. Dahlberg, J.A. Mercy, A.B. Zwi and R. Lozano (eds.), 2002. World Report on Violence and Health. World Health Organization. https://apps.who.int/iris/bitstream/handle/10665/42495/9241545615_eng.pdf;jsessionid=902EBEECF2B1889D5AD4F12CF554B2E4?sequence=1 Accessed 13 September 2020.

Rutherford, A., A.B. Zwi, N.J. Grove and A. Butchart, 2007. Violence: a glossary. Journal of Epidemiology & Community Health, 61:676-680.

Annotations

Synonyms

Not identified.

Additional scientific description

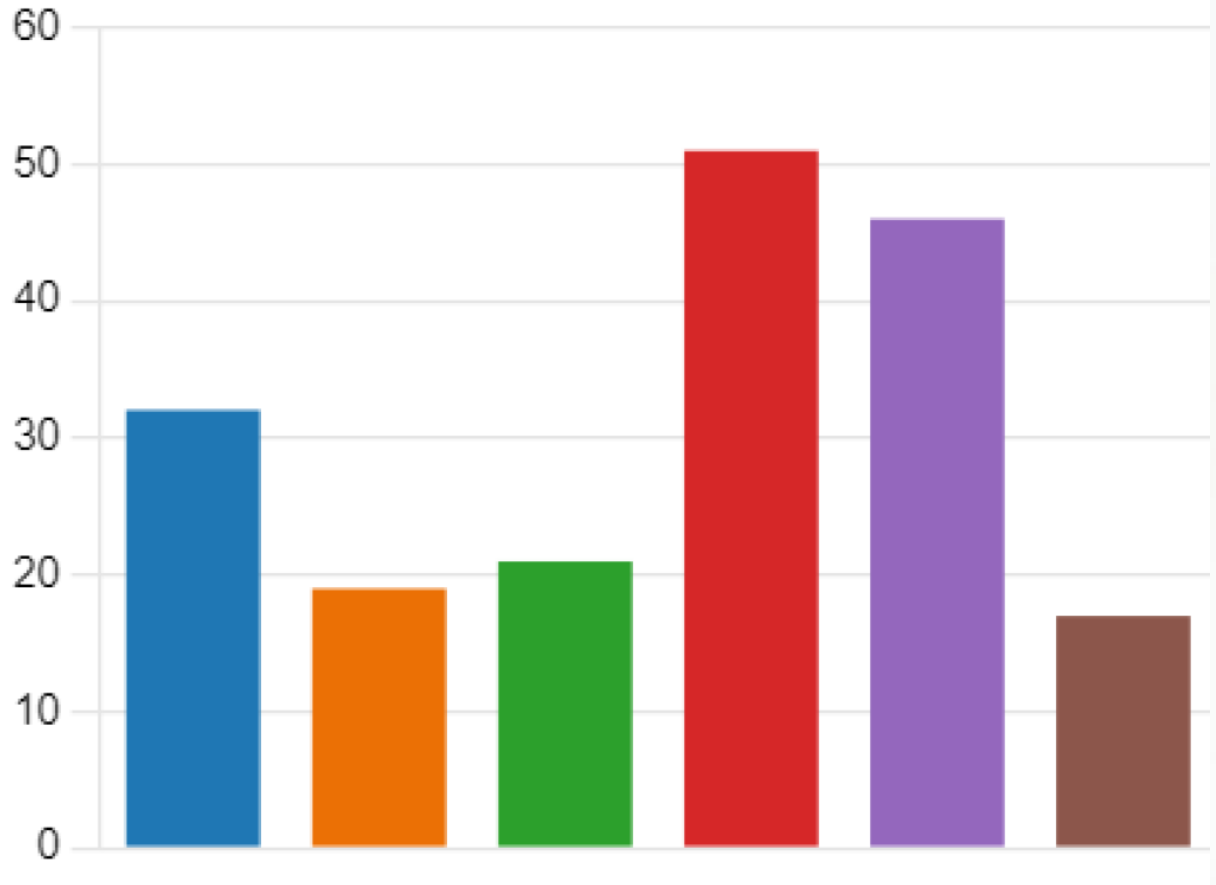
The World Health Organization categorises violence as: self-directed, interpersonal and collective. All three categories of violence can have a societal impact whether directly or indirectly (WHO, 2002). According to Galtung (1969, 1996), violence can also be direct, structural, and cultural. There are several forms and typologies of violence. These are characterised here on the basis of the motives, target groups and tactics of violence:

Motives:

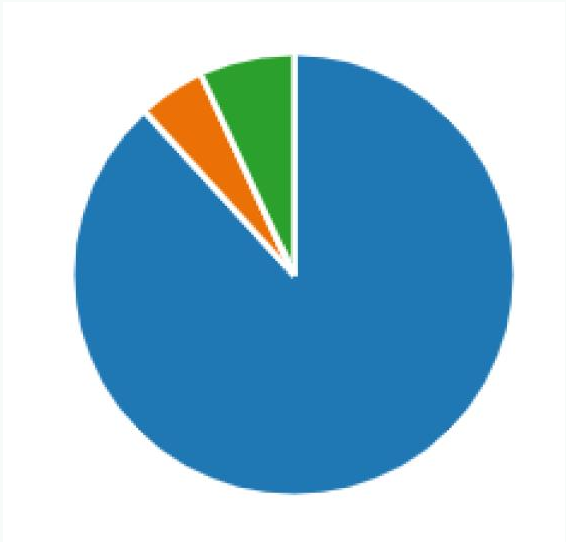
Political violence is defined as hostile, aggressive or violent acts motivated by political objectives or a desire to directly or indirectly affect political change or change in governance. As a phenomenon, political violence includes a range of political acts from mass protest, riots, coups, rebellions, uprisings and terrorism to violent acts committed by state and non-state actors, including pogroms, ethnic cleansing, and genocide (Kalyvas, 2013; Balcells, 2015).

WHAT ARE THE HIPs USED FOR?

Disaster risk reduction planning	32
Disaster response planning	19
Disaster risk monitoring	21
Research	51
Training/education	46
Other	17



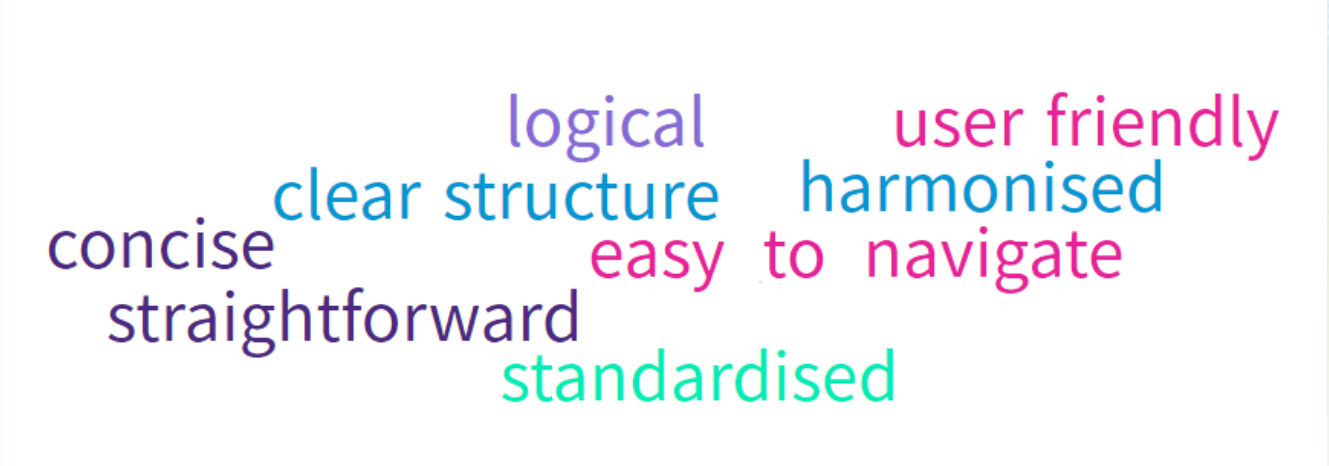
USER FEEDBACK ON THE HIPs



The HIPs are useful because they are:

USER FEEDBACK ON THE HIPs

The structure of the HIPs is clear because they are:



However, respondents also suggested refinements around:

- Interoperability with IT systems
- Simplification
- Suggestions that sections within each profile may need to separated out.

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WHY ARE STATISTICS USEFUL FOR THE HIPs?

- **The Importance and Role of Statistics in Hazard Information Profiles (HIPs)**

- Data Standardization and Consistency
- Risk Assessment and Analysis
- Decision-Making Support
- Resource Allocation and Planning
- Monitoring and Evaluation
- Communication and Public Engagement
- Interdisciplinary Collaboration

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WHY ARE THE HIPs USEFUL FOR STATISTICIANS?

- **The Importance of Hazard Information Profiles (HIPs) for Statisticians**
- HIPs help in assessing and quantifying risks associated with various events or conditions, which is essential for statistical modeling and analysis.
- HIPs are crucial in identifying potential hazards, and thus statisticians can better understand the underlying data and its variability.
- HIPs can guide the design of experiments and studies, ensuring the consideration of relevant factors and that data collection is robust.
- HIPs enhance the reliability of statistical conclusions.

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THE ‘LIGHT-TOUCH’ REVIEW PROCESS

- The HIPs are being updated through a ‘light touch’ process.
- Some HIPs may be added, and others removed
- The format will be kept but
  - New scientific information will be added where relevant
  - Outcomes will be replaced by impacts in the ‘examples of drivers, outcomes, and risk management’ section
  - More information on the multi-hazard context will be added
  - References will be updated
  - All sections will be reviewed and revised if needed

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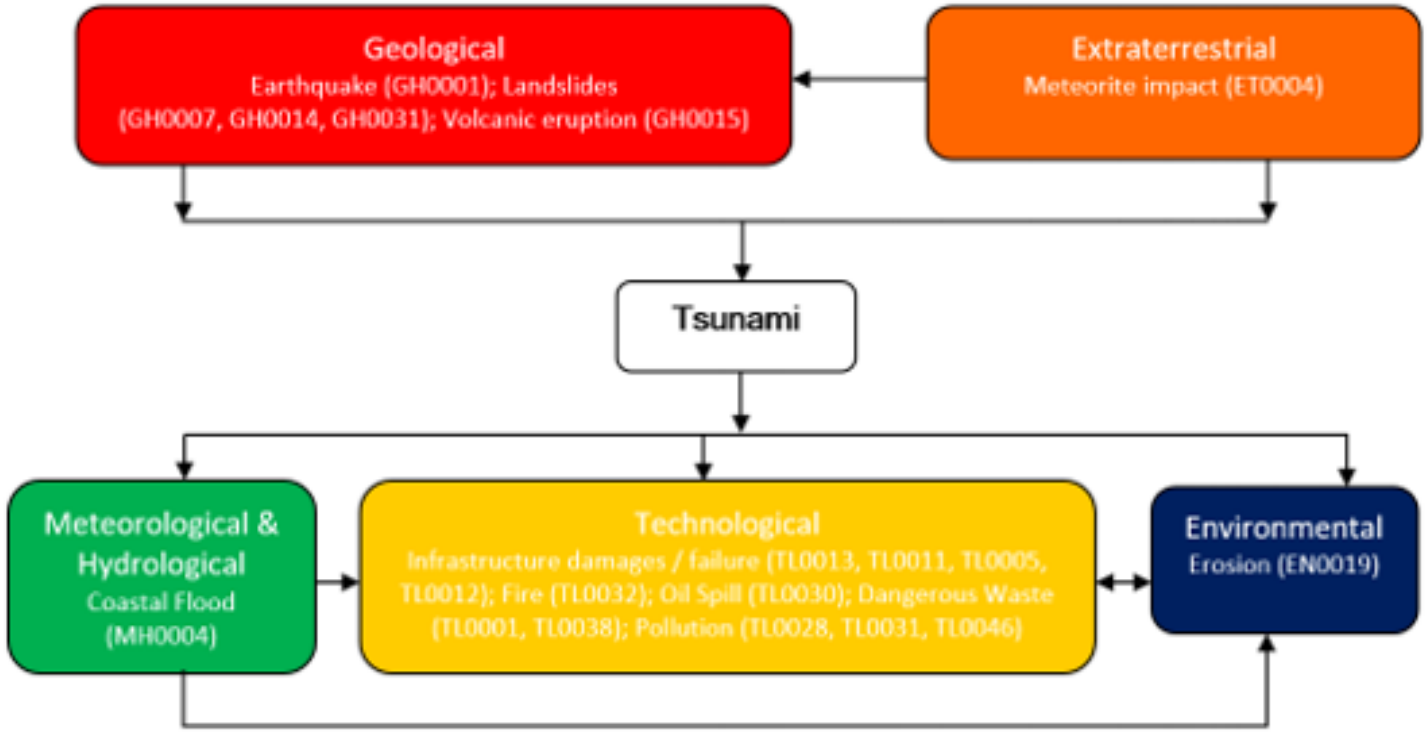
ADDITION OF A MULTI-HAZARD CONTEXT SECTION

Multi-hazard Context

Some of the scientifically evidenced interactions between tsunamis and other hazards are summarized in the figure below. This is not an exhaustive list and should not be used alone for Disaster Risk Management planning. Specific examples of multi-hazard Context can be found in the 'Drivers' and 'Impacts' sections below.



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ADDITION OF AN EARLY WARNING SECTION

- The monitoring/early warning section is aligned with the Early Warnings for All initiative led by different UN Agencies
- It focuses only on Pillar 1 Disaster risk knowledge and management and Pillar 2 Detection, observation, monitoring, analysis, and forecasting of this initiative
- There may not be information on early warning available for all 300 hazards in the HIPs, but information on the monitoring of hazards may be available more broadly

1. Which institution(s) produce Disaster Risk Data/Information?
2.a. How is the Hazard Monitored/Observed/Forecast?
2.b. What is the lead time of the EWS?

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THE ‘LIGHT-TOUCH’ REVIEW PROCESS

- A Steering Group is tasked to lead the process.
- Eight (8) Technical Teams made of experts are established, one for each type of hazards (Hydrological & Meteorological, Extraterrestrial, Environmental, Geological, Chemical, Biological, Technological, Societal).
- Experts from UN agencies, academia, NGOs, Sector, from different regions of the world are members of these technical teams.
- Once revised HIPs are prepared, a review by experts AND by users will be organized. The review process will be transparent, and all submitted comments will be answered.
- The final version will be launched at the Global Platform for DRR in June 2025.

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THE ‘LIGHT-TOUCH’ REVIEW PROCESS

Timeline

2023 Q4	• Finalize TORs for 8 Technical teams • Define common review protocol • Scoping of HIPs that need to be changed and added/removed
2024 Q1	• Edit the HIPs
2024 Q2	• Review changes and refine HIPs
2024 Q3	• Finalise HIPs
2024 Q4	• Copy edit and Design of HIP publication
2025 Q1	• Finalise HIPs and overall report
2025 Q2	• Launch updated Hazard Definition and Classification Review & HIP Supplement

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THE 'LIGHT-TOUCH' REVIEW PROCESS

The role of the User Group

- The HIPs need to be useful, usable and used by a broad range of users.
- User's feedback is essential to achieve this.
- A User Group has been established with members from different continents representing different stakeholders.
- The members of the User Group provide feedback on the format of the HIPs, on some of the content, making sure that the HIPS can be understood and used by a large number of users with different backgrounds.
- They make suggestions to the Steering Group which makes the final decision.
- In addition to the User Group, a call to review the HIPs will be disseminated through different networks

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THE ‘LIGHT-TOUCH’ REVIEW PROCESS

How to get involved?

- The HIPs are available:
- here: https://council.science/publications/hazard-information-profiles/
- Or here: https://www.preventionweb.net/drr-glossary/hips#
- If you are an expert on one of the hazards in the 302 HIPs, you can become an expert reviewer
- If you are not an expert but you use or plan to use the HIPs in your work, you can become a user reviewer
- Let us know you are interested, and we will include you in the call

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NEXT STEPS

- The draft updated HIPs will be available soon
- A review process will then start with call for reviewers shared in the next couple of weeks
- We would like to request you to answer the call and participate in the review of the updated HIPs
- You may become an expert reviewer for the hazards in your area of expertise
- You may also become a user reviewer for the hazards you are not an expert of but are of concern for you and colleagues

International Science Council

company/international-science-council

@ISC

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Thank you!

For more information, or if you have questions

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