# Disaster-related

# Statistics: Some Thoughts

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# As an introduction

- The Forum's debates and exchanges show major progress in understanding disaster risk.
- There is a comprehensive theoretical framework for understanding the impacts and consequences on society, territory and economy.
- The framework proposes tools and recommendations for action, prevention and response to such events.
- These procedures highlight the role of information availability for evidence-based decisions.
- As well as considering the links between producers and users, as suppliers and demanders of data.

# This presentation aims to contribute on the thinking of…

- The key nature and particularities that define disaster-related statistics.
- Outlined as open questions.
- Bearing in mind the universe of data across the risk cycle.
- From an integrative perspective of the data production flow and transition into information.
- The linkage between producers and users.
- Possible future exercises.

# Nature of disaster-related statistics

- Disaster-related statistics are part of a complex and multidisciplinary environmental/territorial/economic domain.
- Therefore, statistical treatment must take into account for biophysical as well as socioeconomic and institutional phenomena.
- Based on different data collection or compilation sources.
- Grounded on specific statistical methodologies.
- Duties and responsibilities are spread on different institutions, not always well coordinated.

# Disaster-related statistics' requirements

- Such a conceptual spectrum requires specific scientific and technical knowledge for its production.
- Adequate technological resources and trained technical staff.
- The capacity to select and interpret data in order to draw truthful and accurate conclusion.
- A structure that enables the exchange of data and information capable of providing trust and credibility.
- A governance structure that enables participation and manages interdependencies among stakeholders.

# Transition from *ad hoc* data to systematized data

- In the early stages, data needs related to disasters were addressed on *ad hoc* basis, driven by the urgency of an immediate response to the event.
- Advances in management and understanding of these phenomena promoted, not only immediate action, but the preparedness, prevention, and recovery of damage.
- Processes that require continuous, integrated and systematized information.
- Supported by statistical procedures and methodological guidance.

# How to meet data demand?

- We have pointed out that disaster-related data requirements span a broad and multidisciplinary spectrum.
- They arise from countries' international agenda commitments.
- From national requirements tied to goals and objectives of risk-management strategies, contingency plans and recovery actions.
- From local plans and/or policies with specific, targeted demands.

# How to meet to data demand?

- This leads us to consider segmenting demand according to the stages of the risk cycle.

- Along with identifying the data required at each stage.

¿Who what and when?

- Based on identifying data sources along with the responsible institutions.

¿Who produces what and how?

# Role of National Statistical Offices and National Statistical Systems

- NSOs play a central role in the data ecosystem about disaster- related statistics, as coordinators of the institutions that integrate the National Statistical Systems (NSS), because they have:
  - Technical expertise to meet data demands within their own institutions and across partners.
  - Methodological and operational expertise to support the production, processing, exchange and dissemination of diverse data.
  - Also, NSOs ensure availability and confidentiality of data at the same time that they endorse the comparability.

# Role of National Statistical Offices and National Statistical Systems

- NSOs ensure the use of common standards, classifications, and terminology.
- NSOs are mandated to provide data based on professional independence, quality criteria as well as the use of robust, transparent, and agreed methodologies.
- NSOs guarantee accessibility to all users.
- Also, the NSSs are the solid institutional network and integrate the experience coordinating multiple information producers.

# Fundamental principles of official statistics

*Some questions arise here:*

- How can we overcome the gap between single data to timely and systematic data?
- How can we respond to the demand for data in a comprehensive, coordinated manner, supported by methodological standards, and sustainable over time?
- Is it feasible for disaster-related statistics to be part of a country's official statistics?
- How can we certify that such data follow the Fundamental Principles of Official Statistics?

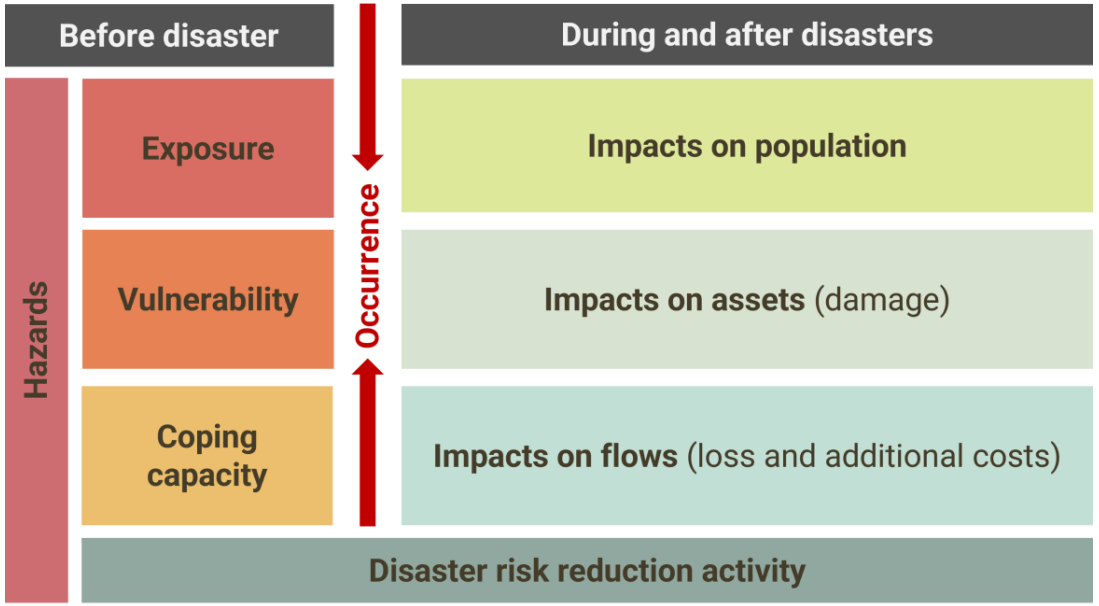
# Fundamental principles of official statistics

- Principles that promote methodologies and statistical production of quality data.
- Allowing users to apply criteria for data accuracy, validation, consistency, and comparability across time and space.
- Essentials for analyzing data and drawing accurate conclusions.
- Endorsed by statistical community of all countries.

# Global Framework for Disaster-related Statistics (G-DRSF)

- Represents major progress in establishing a foundation for compiling and using disaster-related statistics.
- It proposes standardized statistical methodologies, conceptual definitions, classifications, and new data sources.
- Emphasizing that the availability of accurate and consistent data is essential for effective action.
- Such data must be articulated within a common statistical framework.
- To enable better understanding of risk, support evidence-based planning and policies.
- To facilitate consistent comparisons across time and space.

# Global Framework for Disaster-related Statistics (G-DRSF)




- The conceptual framework is structured around three measurement areas:
  - Risks
  - Impacts
  - Risk reduction
- Data are required for different moments
  - Before the event
  - During the event
  - Post-event

# Global Framework for Disaster-related Statistics (G-DRSF)

- Bringing the three areas together leads to the identification, characterization, and understanding of the set of associated phenomena.
- However, as highlighted in the global framework, data availability is only partial.
- Limitations are observed.
- Certain conceptual definitions require operationalization and delimitation of statistical units.
- There is a need for precision in collection/compilation methodologies.
- Use of harmonization and standardization criteria.
- Definition of both quantitative and qualitative units of measure.
- Documentation and preparation of methodological sheets.

# Brief comments on the tables

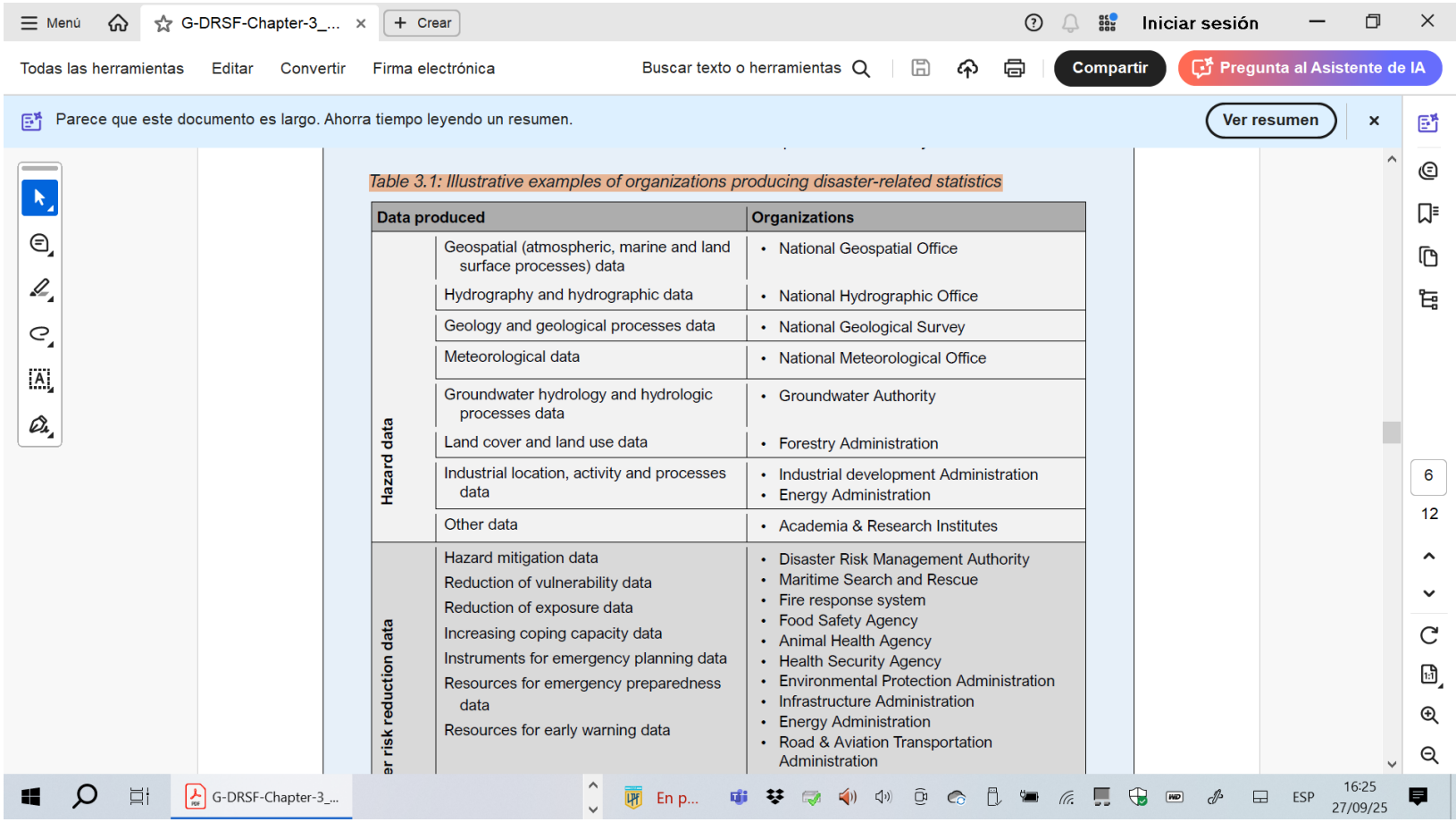
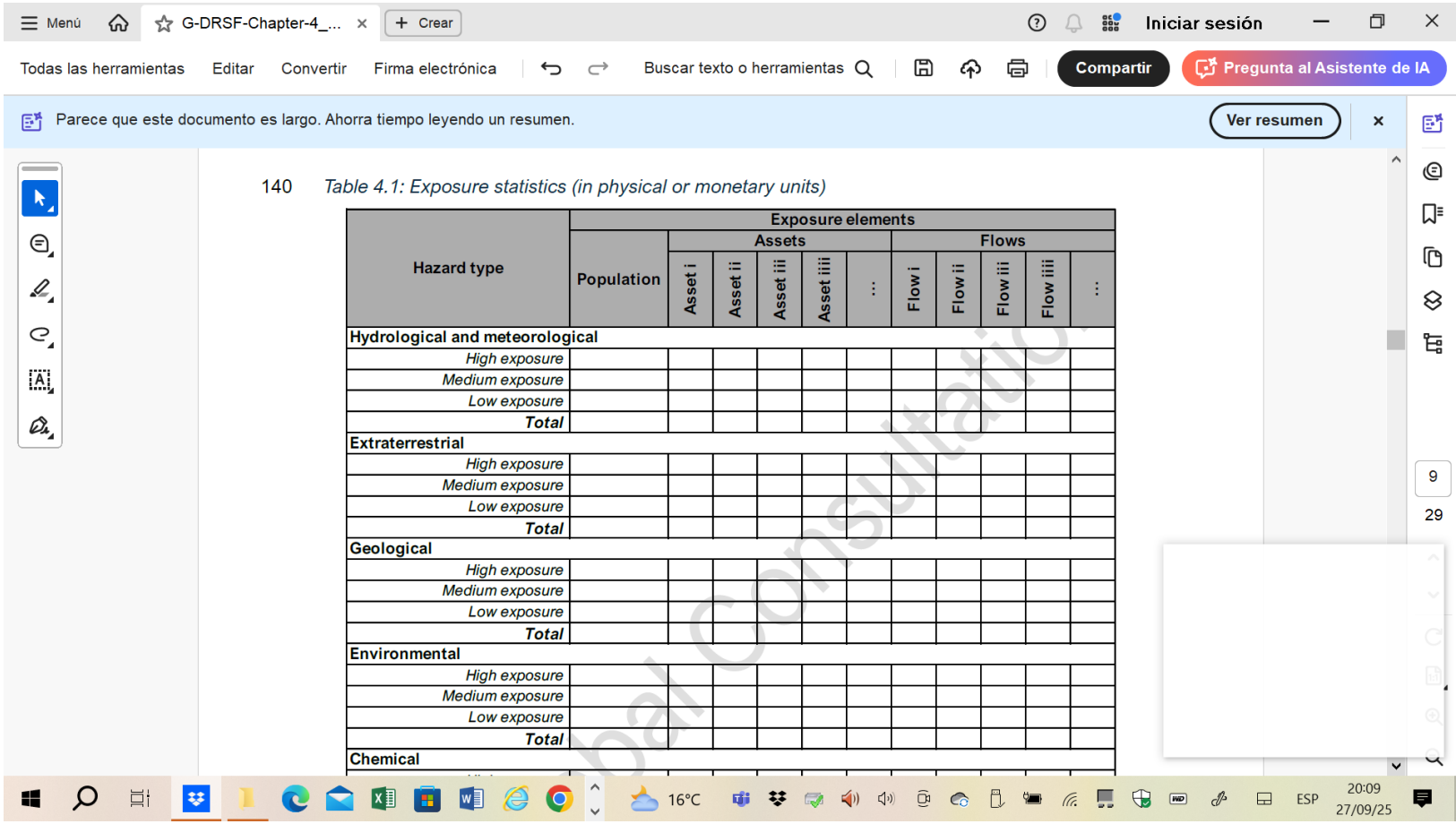


Table 3.1: Illustrative examples of organizations producing disaster-related statistics

| | Data produced | Organizations |
|---|---|---|
| Hazard data | Geospatial (atmospheric, marine and land surface processes) data | • National Geospatial Office |
| | Hydrography and hydrographic data | • National Hydrographic Office |
| | Geology and geological processes data | • National Geological Survey |
| | Meteorological data | • National Meteorological Office |
| | Groundwater hydrology and hydrologic processes data | • Groundwater Authority |
| | Land cover and land use data | • Forestry Administration |
| | Industrial location, activity and processes data | • Industrial development Administration<br>• Energy Administration |
| | Other data | • Academia & Research Institutes |
| er risk reduction data | Hazard mitigation data<br>Reduction of vulnerability data<br>Reduction of exposure data<br>Increasing coping capacity data<br>Instruments for emergency planning data<br>Resources for emergency preparedness data<br>Resources for early warning data | • Disaster Risk Management Authority<br>• Maritime Search and Rescue<br>• Fire response system<br>• Food Safety Agency<br>• Animal Health Agency<br>• Health Security Agency<br>• Environmental Protection Administration<br>• Infrastructure Administration<br>• Energy Administration<br>• Road & Aviation Transportation Administration |

# Brief comments on the tables



Menú G-DRSF-Chapter-4_... Crear Iniciar sesión

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Parece que este documento es largo. Ahorra tiempo leyendo un resumen. Ver resumen

140 *Table 4.1: Exposure statistics (in physical or monetary units)*

| Hazard type | Exposure elements | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Population | Assets | | | | | Flows | | | | |
| | | Asset i | Asset ii | Asset iii | Asset iiii | ... | Flow i | Flow ii | Flow iii | Flow iiii | ... |
| **Hydrological and meteorological** | | | | | | | | | | | |
| *High exposure* | | | | | | | | | | | |
| *Medium exposure* | | | | | | | | | | | |
| *Low exposure* | | | | | | | | | | | |
| ***Total*** | | | | | | | | | | | |
| **Extraterrestrial** | | | | | | | | | | | |
| *High exposure* | | | | | | | | | | | |
| *Medium exposure* | | | | | | | | | | | |
| *Low exposure* | | | | | | | | | | | |
| ***Total*** | | | | | | | | | | | |
| **Geological** | | | | | | | | | | | |
| *High exposure* | | | | | | | | | | | |
| *Medium exposure* | | | | | | | | | | | |
| *Low exposure* | | | | | | | | | | | |
| ***Total*** | | | | | | | | | | | |
| **Environmental** | | | | | | | | | | | |
| *High exposure* | | | | | | | | | | | |
| *Medium exposure* | | | | | | | | | | | |
| *Low exposure* | | | | | | | | | | | |
| ***Total*** | | | | | | | | | | | |
| **Chemical** | | | | | | | | | | | |

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# Brief comments on the tables

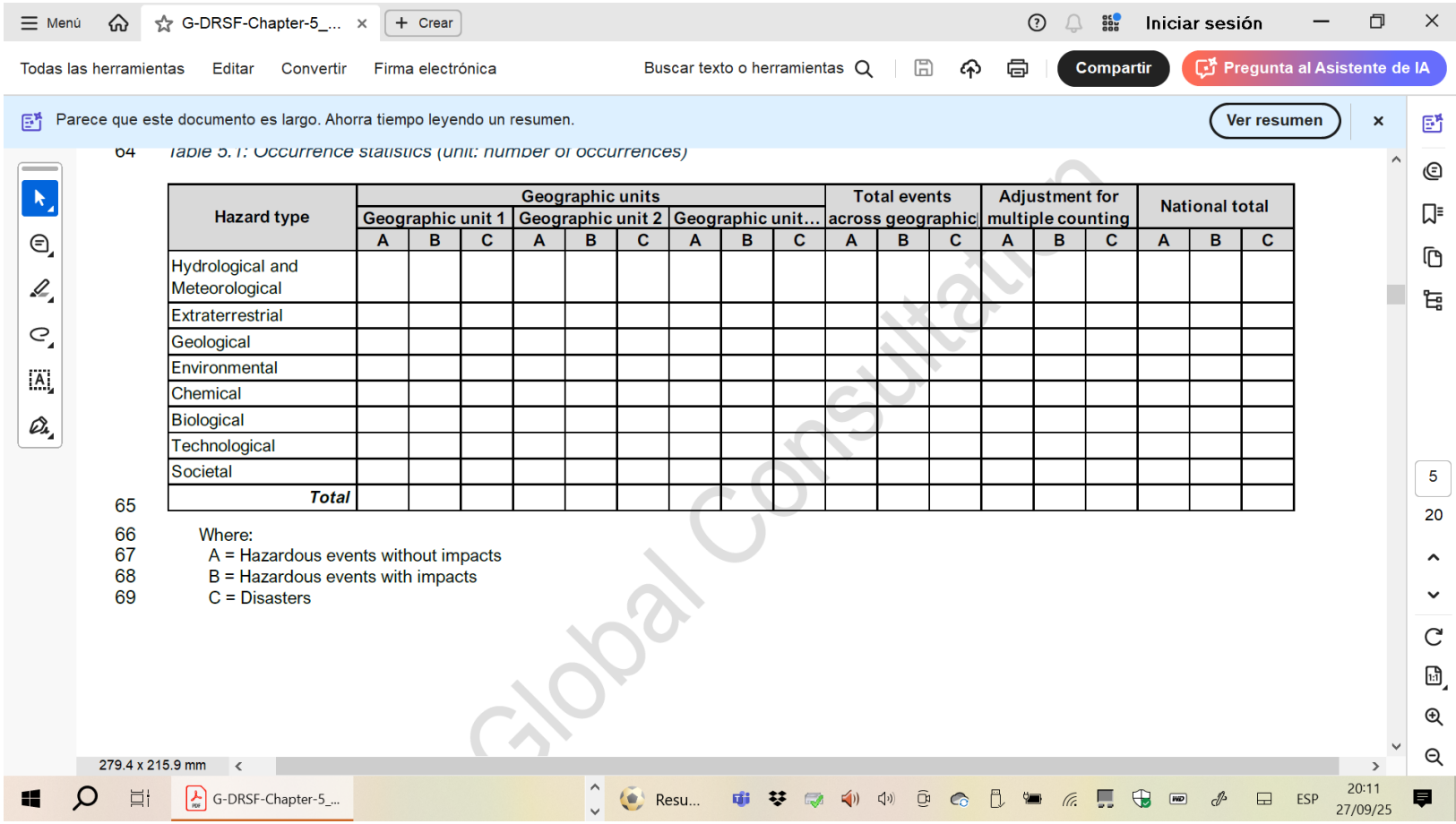

Table 5.1: Occurrence statistics (unit: number of occurrences)

| Hazard type | Geographic units | | | | | | | | | Total events across geographic | | | Adjustment for multiple counting | | | National total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Geographic unit 1 | | | Geographic unit 2 | | | Geographic unit… | | | | | | | | | | | |
| | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| Hydrological and Meteorological | | | | | | | | | | | | | | | | | | |
| Extraterrestrial | | | | | | | | | | | | | | | | | | |
| Geological | | | | | | | | | | | | | | | | | | |
| Environmental | | | | | | | | | | | | | | | | | | |
| Chemical | | | | | | | | | | | | | | | | | | |
| Biological | | | | | | | | | | | | | | | | | | |
| Technological | | | | | | | | | | | | | | | | | | |
| Societal | | | | | | | | | | | | | | | | | | |
| ***Total*** | | | | | | | | | | | | | | | | | | |

Where:
A = Hazardous events without impacts
B = Hazardous events with impacts
C = Disasters

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# Recent work in the LAC region

- SCA/ECLAC Working Group on the Measurement and Recording of Indicators Related to Disaster Risk Reduction (WG-DRR)
- It was created in November 2017 within the framework of the IX Meeting of the Statistical Conference of the Americas (SCA/ECLAC) to attend:
  - The commitments made with the adoption of the Sendai Framework
  - The adoption of the report and recommendations of the Open-ended Intergovernmental Expert Working Group on Indicators and Terminology Related to Disaster Risk Reduction (OIEWG).

# SCA/ECLAC WG on the Measurement and Recording of Indicators Related to Disaster Risk Reduction

Some results achieved during the three work periods were:

- Identify certain limitations for indicator analysis on cross country comparison.
- Difficulties in identifying common sources.
- Lack of methodological procedures, formats, definitions, concepts, and calculation methods for indicators.
- Monetary values expressed in different units across the region.
- Data reported as absolute values instead of rates, for example.

# SCA/ECLAC WG on the Measurement and Recording of Indicators Related to Disaster Risk Reduction

The WG produced a set of documents, tools and instruments for:

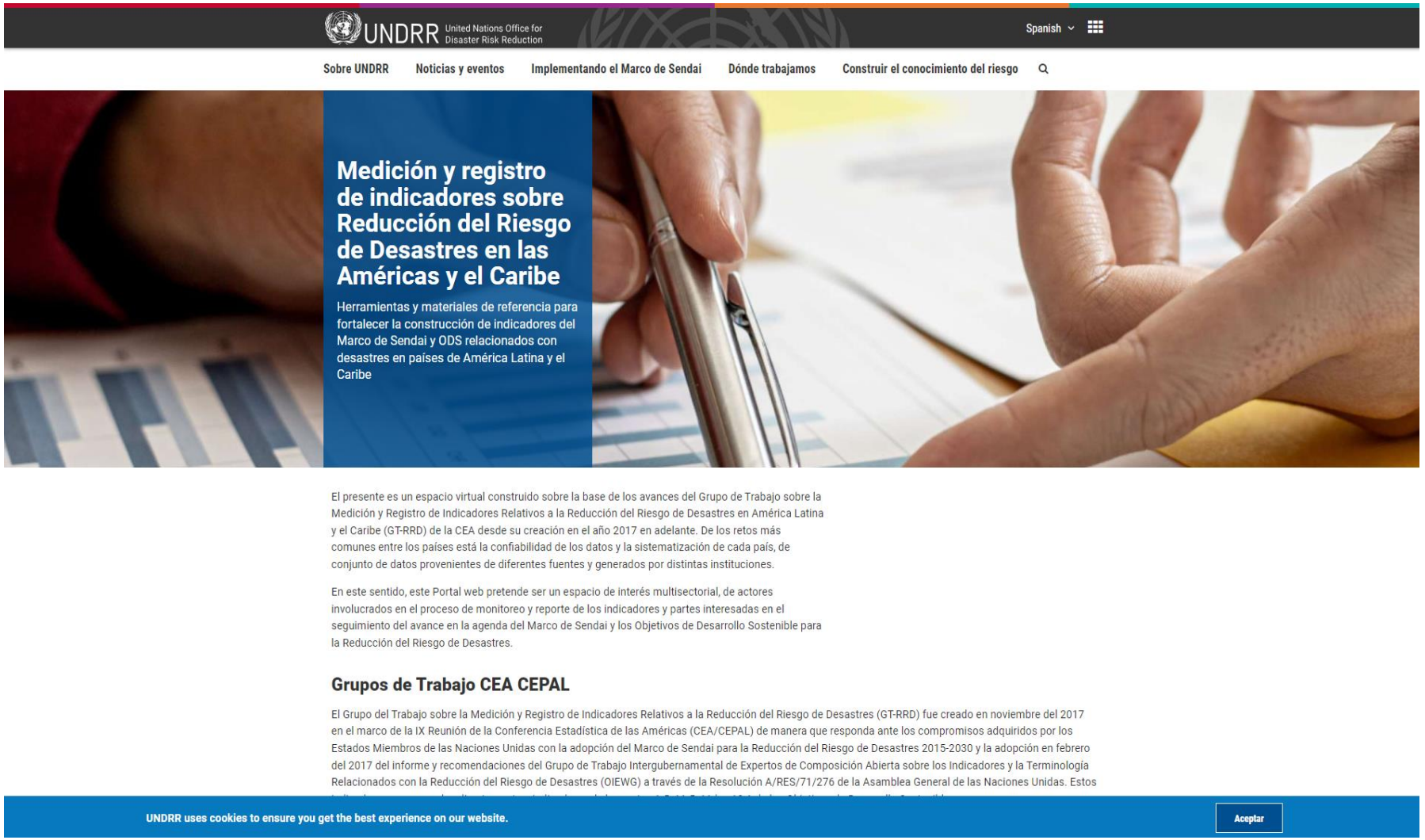
- Helping to improve validation, timeliness and quality of data.
- Highlighting the need to implement systems for documentation and systematization of information.
- Adopting statistical standards that ensure continuity, sustainability and accountability of calculation processes and reporting.
- These materials are available on the website: https://www.undrr.org/es/datos-estadisticos-marco-de-sendai
- The website seeks to be a multisector space for actors involved in monitoring and reporting disaster-related indicators.
- It helps as a didactic user-friendly online training resources, with agreed terminology and gender-sensitive language, summarizing and describing the WG's activities and products by biennium of implementation.

PRODUCTOS

# Estructura de la página web

https://www.undrr.org/es/datos-estadisticos-marco-de-sendai

**Constituye un espacio virtual que sintetiza los resultados y productos del GT-RRD de la CEA desde su creación a finales del año 2017, por período de implementación**



# Conclusions and recommendations

- NSSs coordinated by NSOs are well placed to respond to information demands.
- They have expertise in producing high-quality, comparable statistic data over long periods.
- However, they do not always clearly understand the requirements of risk-management agencies.
- They often face limitations in including new topics.
- They need to advance the adoption of new technologies and new data sources.

# Conclusions and recommendations

- Disaster risk-management agencies do not always have a complete picture of the information available within the NSS.
- Nor of the methodological criteria for data production.
- Quoting data sources.
- The need of defining the answer before the question, query or data capture—together with the statistical unit, variables and the consistent unit of measure.

# Conclusions and recommendations

- Strengthen coordination between disaster risk and the statistical community to implement statistical tools and methodological processes throughout the entire information cycle.
- This will underpin the inclusion of disaster risk management within countries' National Statistical Systems, with a clear mandate integrated in the statistical plans.

# Thank you
# Muchas gracias

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