The 7th ASEAN-JAPAN SMART CITIES NETWORK
HIGH LEVEL MEETING

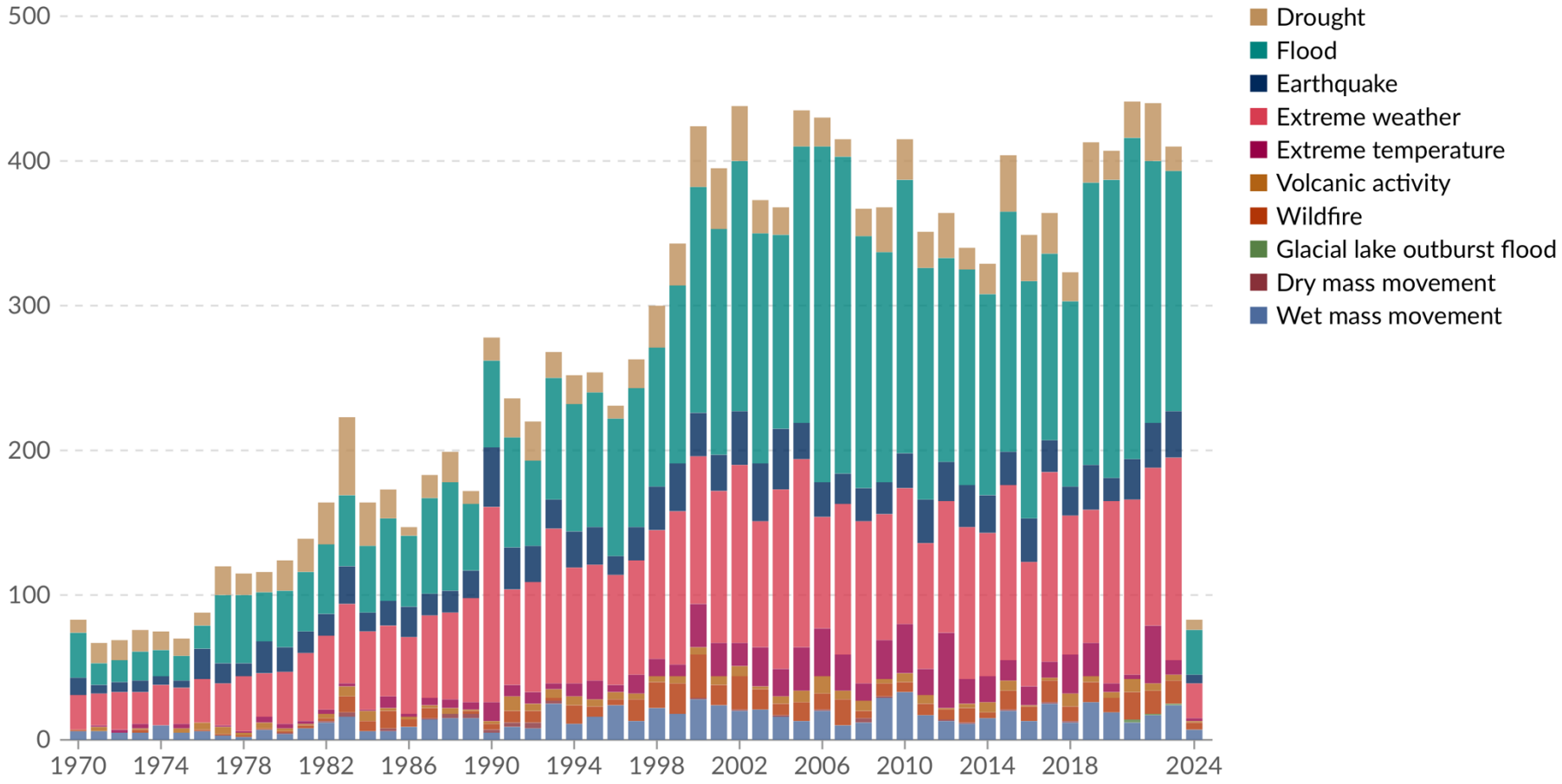
Utilization of International Standards for Smart Communities

Takahiro Ono
International Research Institute of Disaster Science (IRIDeS), TOHOKU University
Tokio Marine Holdings

Global reported natural disasters by type, 1970 to 2024

Our World in Data

The annual reported number of natural disasters, categorised by type. The number of global reported natural disaster events in any given year. Note that this largely reflects increases in data reporting, and should not be used to assess the total number of events.



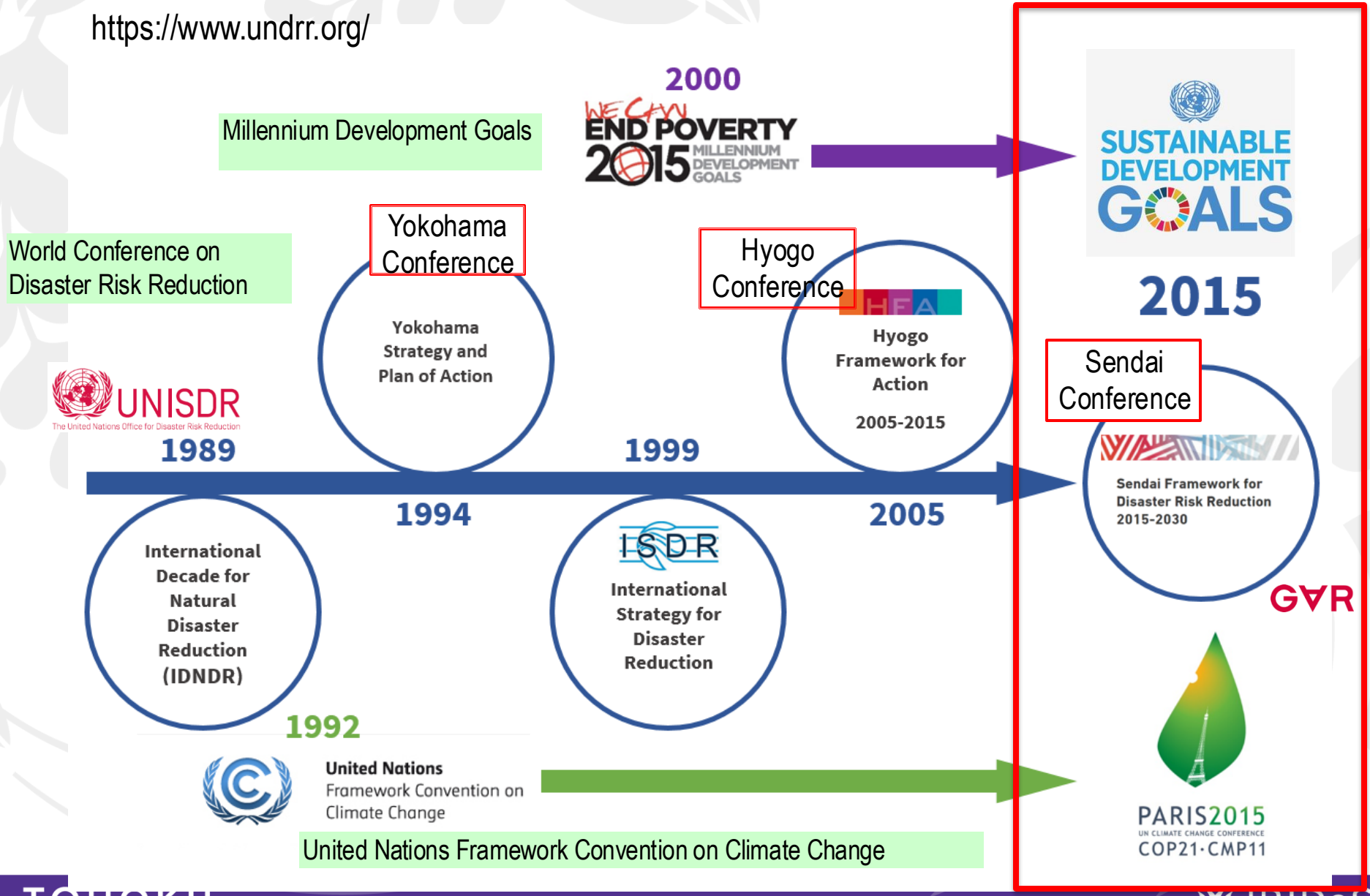
Data source: EM-DAT, CRED / UCLouvain (2024)

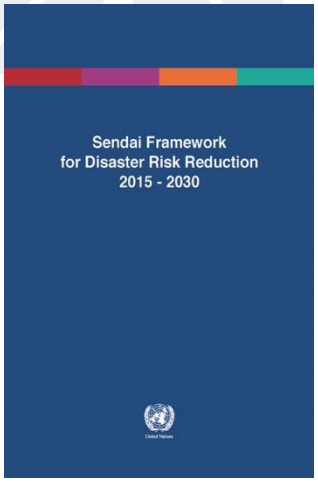
OurWorldinData.org/natural-disasters | CC BY

Note: Data includes disasters recorded up to April 2024.

Global movements in the 2015 UN Conferences

https://www.undrr.org/





Sendai Framework for Disaster Risk Reduction 2015-2030

Scope and purpose

The present framework will apply to the risk of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters, caused by natural or manmade hazards as well as related environmental, technological and biological hazards and risks. It aims to guide the multi-hazard management of disaster risk in development at all levels as well as within and across all sectors.

Expected outcome

The substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries

Goal

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 disaster, increase preparedness for response and recovery, and thus strengthen resilience

Priorities for Action

PA1: Understanding disaster risk

PA2: Strengthening disaster risk governance to manage disaster risk

PA3: Investing in disaster risk reduction for resilience

PA4: Enhancing disaster preparedness for effective response, and to «Build Back Better» in recovery, rehabilitation and reconstruction

Targets

1. *Reduce global disaster mortality*
2. *Reduce the number of affected people globally*
3. *Reduce direct disaster economic loss in relation to GDP*
4. *Reduce disaster damage to critical infrastructure and disruption of basic services*
5. *Increase the number of countries with national and local disaster risk reduction strategies*
6. *Enhance int'l cooperation to developing countries*
7. *Increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people*

Why Standards?

Quality and Resilience
- Secure safety and reliability criteria
- Promotes resilient design

Market Expansion
- Lowers entry barriers by common rules
- Fair competition and cost reduction
- To other countries

Innovation
- Encourages the adoption of new technologies
- Facilitates interoperability among functions

Independent, non-governmental international organization
World's leading standardization organization
Consists of 165 national standard bodies

ISO/TC268 /SC1

Technical Committee "Smart Community Infrastructure"
Focuses on technical aspects of smart community infrastructure which are basic structures that support the operation and activities of urban communities, e.g. energy, water, resource management systems, ICT infrastructure.

- WG1 Infrastructure metrics
- WG2 Integration and interaction framework
- WG4 Data exchange and sharing
- WG5 Energy aspects
- WG6 Disaster risk reduction
- WG7 Utility tunnel

Leadership by Tohoku Univ in formulating the DRR ISO

2015	The "Sendai Framework for Disaster Risk Reduction" was adopted.
2019	Tohoku University took the lead to commence studies on the development of disaster risk reduction standards
2020	Tohoku University and JSA proposed the standardization of the "Disaster Risk Reduction concept " within ISO. Officially approved to establish a working group within ISO to discuss and develop the "Disaster Risk Reduction" led and promoted by Tohoku University
2022	ISO/TR6030 Smart community infrastructures – Disaster Risk Deduction - Survey results and gap analysis" was published.
2024	ISO 37179 "Basic framework for implementation" as principles and general requirements for Smart Community Infrastructure Contributing to Disaster Resilience was published.
2025	ISO 37174 "Guidance for implementing seismometer systems" was published.

Under development

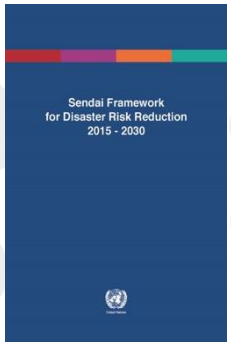
ISO37194 "Guidance for the process of selecting seismometer systems --

ISO37193 "Guidance for risk-informed decision-making, including ex-ante investment"

ISO37116 " Disaster risk finance - Principles and general requirements for financing ex-ante investment in risk reduction"

ISO23638Food products — Quality requirements for processed food products for emergen

ISO 37179 ”Basic framework for implementation”



Priorities for Action

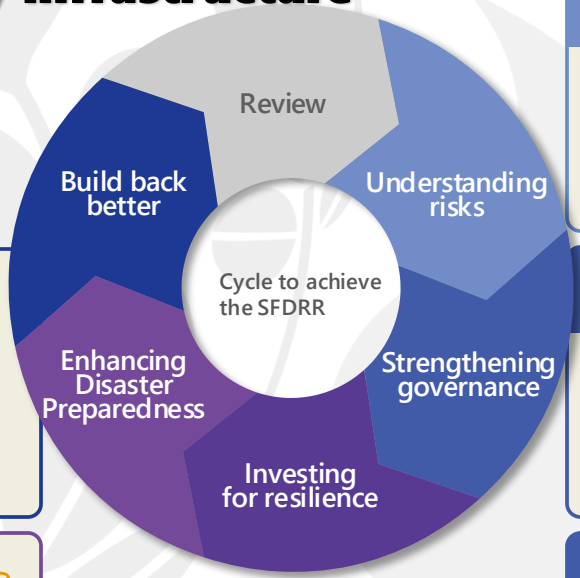
PA1: Understanding disaster risk
PA2: Strengthening disaster risk governance to manage disaster risk
PA3: Investing in disaster risk reduction for resilience
PA4: Enhancing disaster preparedness for effective response, and to «Build Back Better» in recovery, rehabilitation and reconstruction

10 Principles for Smart Community Infrastructure

Overarching Principles

- Stakeholder Inclusiveness
- Optimal Resource Allocation
- Utilization of Technology
- Robustness and Redundancy

6 Core Principles



Science-based approach

Understand and assess hazard risks and their anticipated cascading effects.

Continuous improvement

Community resilience can be strengthened through continuous feedback.

Critical function focus

Identify and strengthen critical functions and resources within community infrastructure.

Prepare for response

Prepare in advance to mitigate risk, respond effectively when a disaster strikes, and minimize the impact.

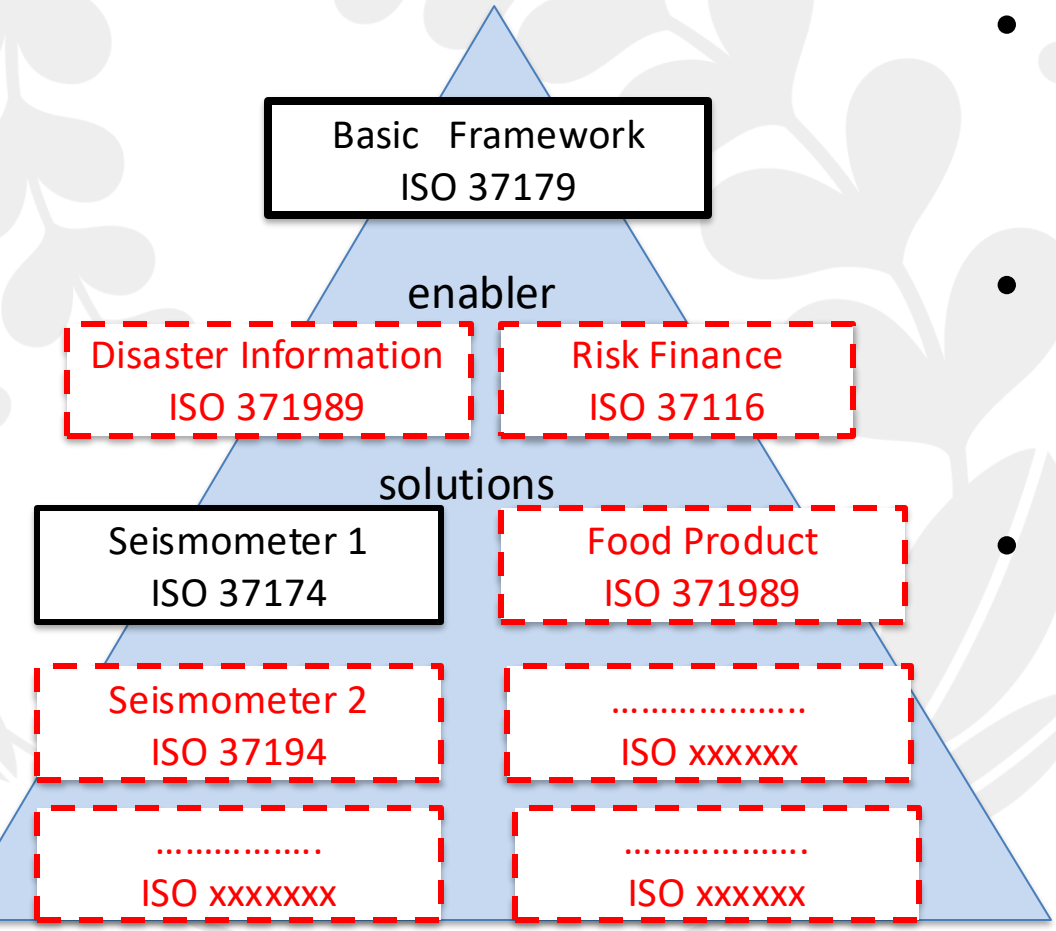
Investment in advance

Ex-ante investment play a key role in reducing disaster risk.

Structural and non-structural measures

Identify the optimal combination of countermeasures based on the risk assessment.

Our future challenge



- Accelerate public–private partnerships for disaster resilience
- Fostering innovation and markets for DRR-related technologies
- Contributing to a sustainable and resilient society