Global Centre for Disaster Statistics
and
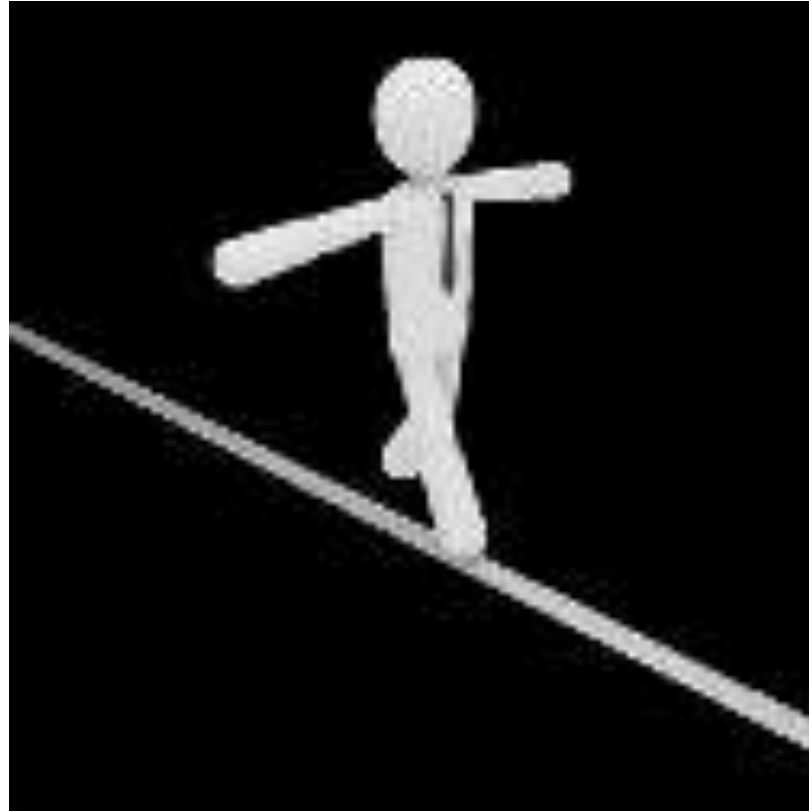# World Bosai Forum/IDRC 2017 Sendai

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Chair, Multi-Hazards Program

Professor,
International Research Institute of Disaster Science (IRIDeS), Tohoku University
Sendai, Japan

Importance of Disaster Damage and Loss Data
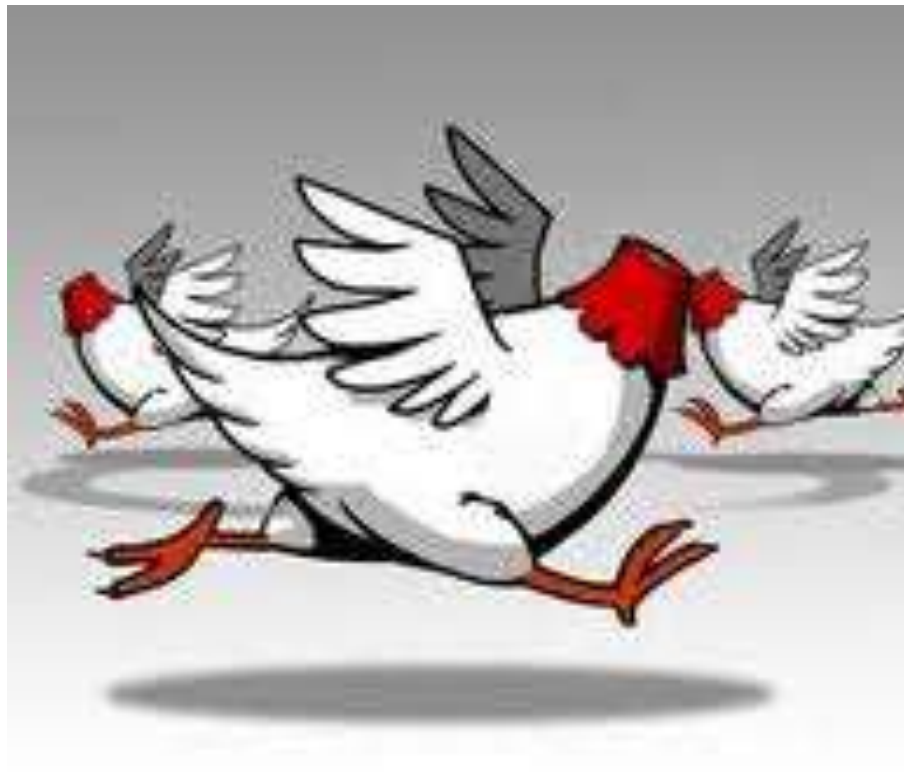
No Data – No Science

Scientists saying things without using data

are

Policy makers making decisions without data/science

are

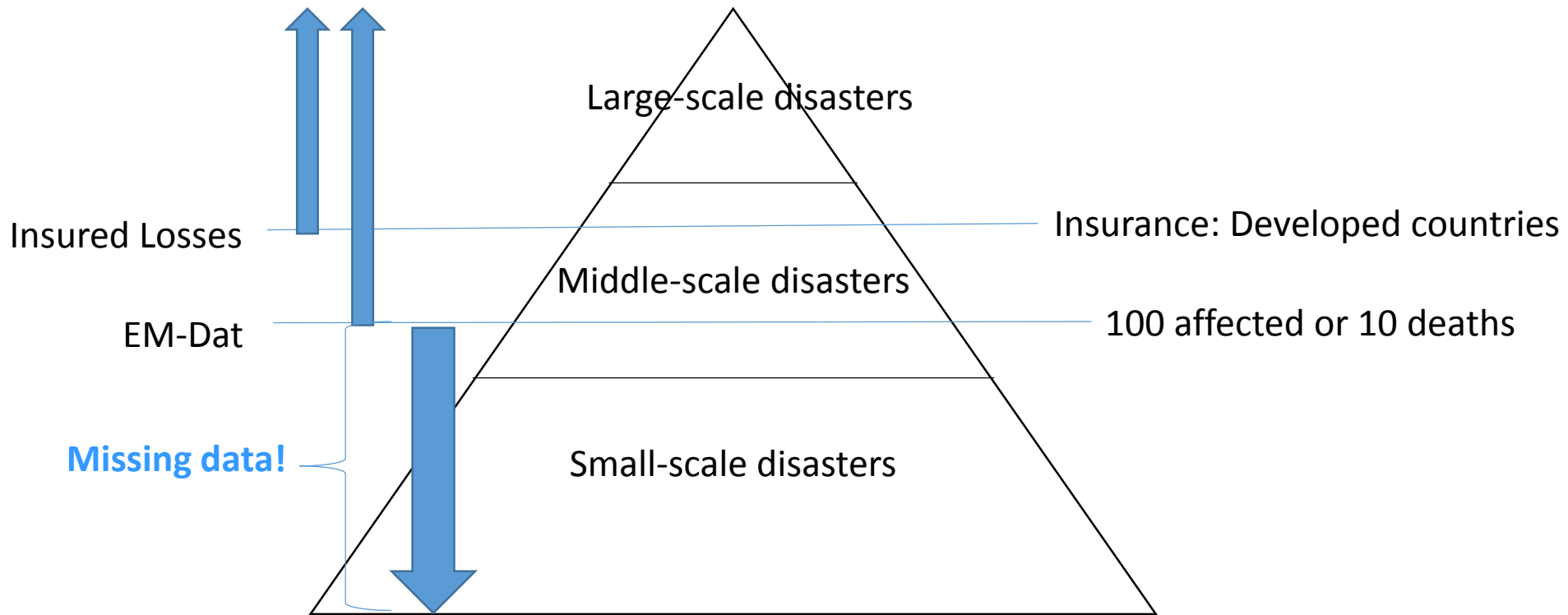# The question is:

Does your government make DRR policy based on sound science supported by disaster damage and loss data?

Countries with national disaster loss databases operated by government (in green); countries without (orange);
no response (grey)

The answer is NO in many countries

- Because most countries do not have a system to collect, archive, analyze, and use the disaster damage and loss data for a long time period

Fact:

Larger-scale disasters are well reported while smaller-scale ones are not

Large-scale disasters

Insured Losses

Insurance: Developed countries

EM-Dat

Middle-scale disasters

100 affected or 10 deaths

Missing data!

Small-scale disasters

Value of Sendai Framework for Disaster Risk Reduction, 2015-2030

Sendai Framework on Disaster Risk Reduction

- Adopted 7 "Global targets"

(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 to 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

Indicator and Terminology of the Sendai Framework

Sendai Framework Paragraph 50

The Conference recommends to the General Assembly the establishment, at its sixty-ninth session, of an open-ended intergovernmental working group, comprising experts nominated by Member States, and supported by the United Nations Office for Disaster Risk Reduction, with involvement of relevant stakeholders, for the development of a set of possible indicators to measure global progress in the implementation of the present Framework in conjunction with the work of the Inter-Agency and Expert Group On Sustainable Development Goal Indicators. The Conference also recommends that the working group consider the recommendations of the United Nations Office for Disaster Risk Reduction Scientific and Technical Advisory Group on the update of the publication entitled "2009 UNISDR Terminology on Disaster Risk Reduction" by December 2016, and that the outcome of its work be submitted to the Assembly for its consideration and adoption.

Indicator and Terminology of the Sendai Framework

Open-ended intergovernmental working group on Indicators and Terminology relating to disaster risk reduction

1st Informal and formal session, 2015 Sep. 28-30th

2nd Informal and formal session, 2016 Feb. 9-11th

1st Informal consultations , 2016 Jun. 20-21st

2nd Informal consultations , 2016 Oct. 10-11st

3rd Informal and formal session, 2016 Nov. 14-18th

Global Target A: Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared to 2005-2015.

A-1 (compound)	Number of deaths and missing persons attributed to disasters, per 100,000 population.
A-2	Number of deaths attributed to disasters, per 100,000 population.
A-3	Number of missing persons attributed to disasters, per 100,000 population.
	The scope of disaster in this and subsequent targets is defined in paragraph 15 of the SFDRR and applies to small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters caused by natural or man-made hazards, as well as related environmental, technological and biological hazards and risk.

Global Target B: Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared to 2005-2015.

B-1 (compound)	Number of directly affected people attributed to disasters, per 100,000 population.
B-2	Number of injured or ill people attributed to disasters, per 100,000 population.
B-3	Number of people whose damaged dwellings were attributed to disasters.
B-4	Number of people whose destroyed dwellings were attributed to disasters.
B-5	Number of people whose livelihoods were disrupted or destroyed, attributed to disasters.

domestic product (GDP) by 2030.

C-1 (compound)	Direct economic loss attributed to disasters in relation to global gross domestic product.
C-2	Direct agricultural loss attributed to disasters. *Agriculture is understood to include the crops, livestock, fisheries, apiculture, aquaculture and forest sectors as well as associated facilities and infrastructure.*
C-3	Direct economic loss to all other damaged or destroyed productive assets attributed to disasters. *Productive assets would be disaggregated by economic sector, including services, according to standard international classifications. Countries would report against those economic sectors relevant to their economies. This would be described in the associated GDP metadata.*
C-4	Direct economic loss in the housing sector attributed to disasters. *Data would be disaggregated according to damaged and destroyed dwellings .*
C-5	Direct economic loss resulting from damaged or destroyed critical infrastructure attributed to disasters. *Those elements of critical infrastructure to be included in the calculation will be at the decision of Member States and described in the accompanying metadata. Protective infrastructure and green infrastructure should be included where relevant.*
C-6	Direct economic loss to cultural heritage damaged or destroyed attributed to disasters.

Global Target 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.	
D-1 (compound)	Damage to critical infrastructure attributed to disasters.
D-2	Number of destroyed or damaged health facilities attributed to disasters.
D-3	Number of destroyed or damaged educational facilities attributed to disasters.
D-4	Number of other destroyed or damaged critical infrastructure units and facilities attributed to disasters. *Those elements of critical infrastructure to be included in the calculation will be at the decision of Member States and described in the accompanying metadata. Protective infrastructure and green infrastructure should be included where relevant.*
D-5 (compound)	Number of disruptions to basic services attributed to disasters.
D-6	Number of disruptions to educational services attributed to disasters.
D-7	Number of disruptions to health services attributed to disasters.
D-8	Number of disruptions to other basic services attributed to disasters. *Those elements of basic services to be included in the calculation will be at the decision of Member States and described in the accompanying metadata.*

Global Target E: Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.

E-1	Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015-2030.
E-2	Percentage of local governments that adopt and implement local disaster risk reduction strategies in line with national strategies. *Information should be provided on the appropriate levels of government below the national level with responsibility for disaster risk reduction.*

	Global Target F: Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030.
F-1	Total official international support, (ODA plus other official flows), for national DRR actions. *Reporting of the provision or receipt of international cooperation for DRR shall be done in accordance with the modalities applied in respective countries. Recipient countries are encouraged to provide information on the estimated amount of national DRR expenditure.*
F-2	Total official international support (ODA plus other official flows) for national DRR actions provided by multilateral agencies.
F-3	Total official international support (ODA plus other official flows) for national DRR actions provided bilaterally.
F-4	Total official international support (ODA plus other official flows) for the transfer and exchange of DRR related technology.
F-5	Number of international, regional and bilateral programmes and initiatives for the transfer and exchange of science, technology and innovation in disaster risk reduction for developing countries.
F-6	Total official international support (ODA plus other official flows) for disaster risk reduction capacity building.
F-7	Number of international, regional and bilateral programmes and initiatives for DRR related capacity building in developing countries.
F-8	Number of developing countries supported by international, regional, bilateral initiatives to strengthen their DRR related statistical capacity.

Global Target G: Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.

G-1 (compound **G-2 —G-5)**	Number of countries that have multi-hazard early warning systems.
G-2	Number of countries that have multi-hazard monitoring and forecasting systems.
G-3	Number of people per 100,000 that are covered by early warning information through local governments or through national dissemination mechanisms.
G-4	Percentage of local governments having a plan to act on early warnings.
G-5	Number of countries that have accessible, understandable, usable and relevant disaster risk information and assessment available to the people at the national and local level.
G-6	Percentage of population exposed or at risk from disasters protected through pre-emptive evacuation following early warning.

Footnote to indicator G-6: Member States in a position to do so are encouraged to provide information on the number of evacuated people.

Challenges and opportunities
（personal point of view）

1. Data disaggregation is important. It is impossible to make policy based on data aggregated in country level. For example in the number of death, it is essential to now when, where, who (gender, age, disability) and the cause of death.

2. Vertical and horizontal coordination for NDMOs
- NDMOs do not have all the data. Disaster damage and loss data to be gathered by local governments and line-ministries --- Governance issue, but it is a chance to enhance the NDMOs' role

What can we do
with disaster damage and
loss data?

(People) Number of Fatalities and Missing Persons Resulting from Natural Disasters

Major disaster: Great East Japan Earthquake (22,010)

Main disasters: Mikawa Earthquake (2,306), TyphoonMakurazaki (3,756)

Main disaster: Nankai Earthquake (1,443)

Main disaster: Typhoon Kathleen (1,930)

Main disaster: Fukui Earthquake (3,769)

Main disaster: Nanki torrential rains (1,124)

Main disaster: Typhoon Touyamaru (1,761)

Main disaster: Typhoon Isewan (5,098)

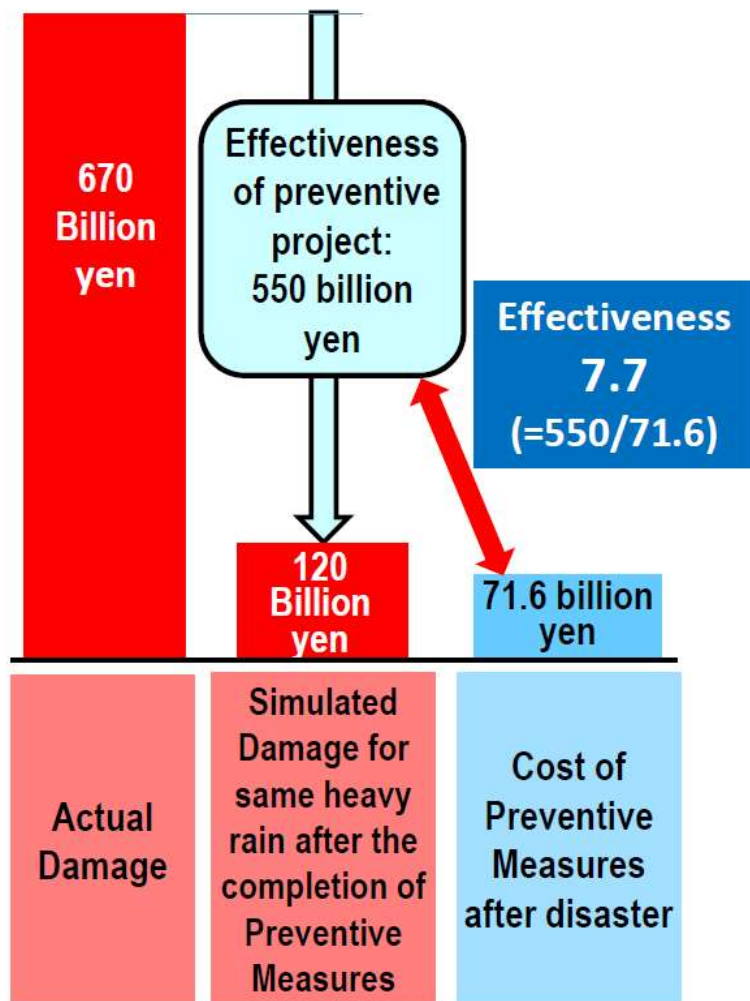Major disaster: Great Hanshin-Awaji Earthquake (6,437)
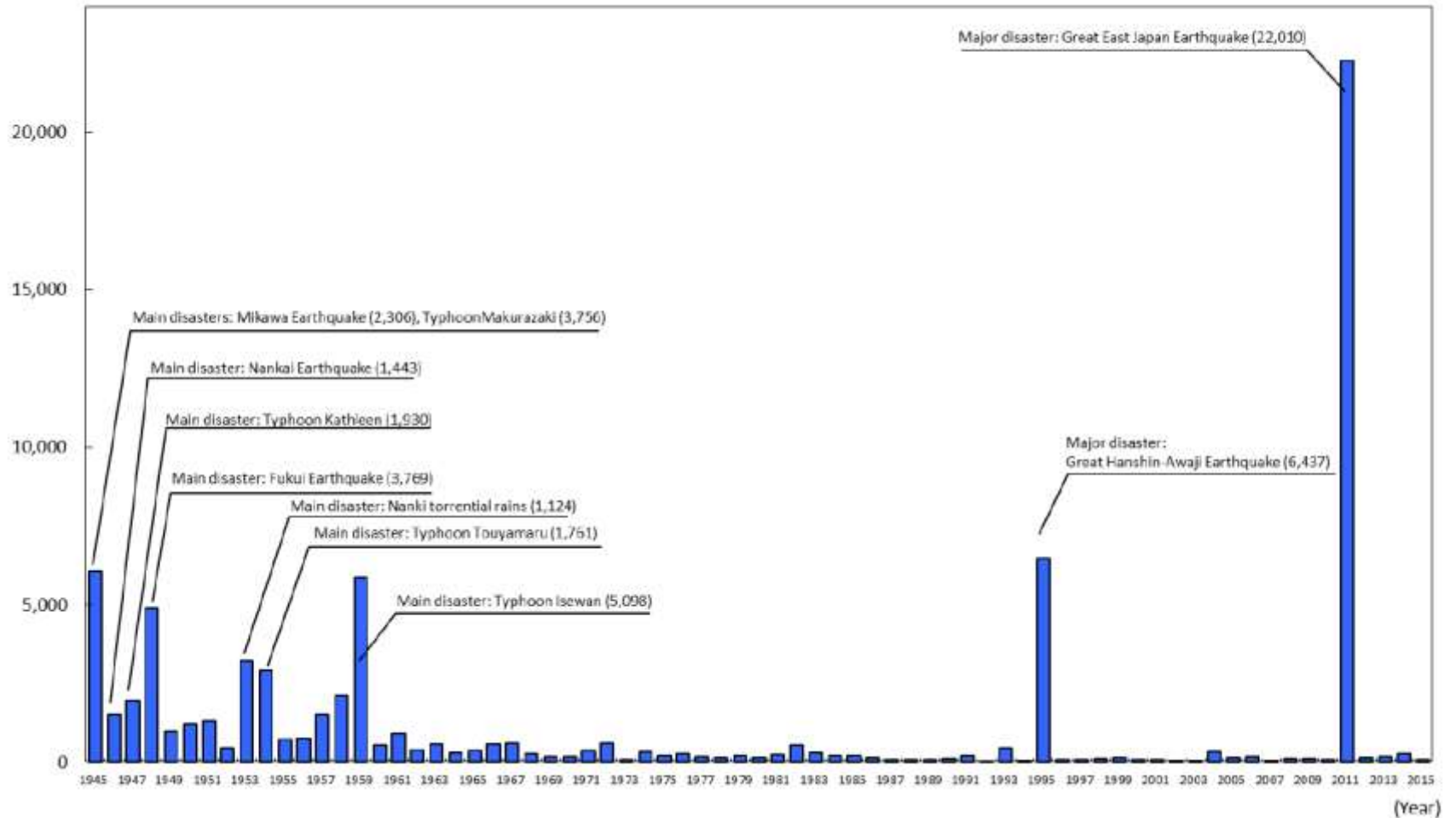
Number of Fatalities and Missing Persons Resulting from Natural Disasters in Japan, 1945-2015

Utilization of the statistics :
- ## Identification of Effects of Preventive Measures

The case of Tokai Storm on September 11-13 2000

670 Billion yen — Actual Damage

Effectiveness of preventive project: 550 billion yen

Effectiveness **7.7** (=550/71.6)

120 Billion yen — Simulated Damage for same heavy rain after the completion of Preventive Measures

71.6 billion yen — Cost of Preventive Measures after disaster

Inundation in Nishibiwajima Town

7

Source: Presentation by MLIT (Feasibility assessment of proposed indicators, using existing disaster damage statistics in Japan)

White Paper (防災白書Bosai Hakusho)

Year-round schedule for the White Paper

(2) Requests for submissions placed with the relevant ministries and agencies based on the concepts and draft table of contents

January

(3) Begin the writing of the manuscript

February

(1)The Cabinet Office starts to develop the concepts and draft the table of contents

November

(4) Finish the writing of the manuscript

The end of April

May

June

(6) Preparation of the final manuscript
(7) Cabinet gives final approval to the White Paper

(5) Series of meetings on the manuscript among related sections in the Cabinet Office and related ministries and agencies

Source:

White Paper (防災白書Bosai Hakusho)

Example

White Paper on Disaster Management 2011 Executive Summary (Provincial Translation)

Part 1 The Great East Japan Earthquake

Chapter 1 Overview of the Earthquake and Tsunami, and
Countermeasures for Them

1-1-1 Overview of the earthquake and tsunami disaster

1-1-2 Emergency response

1-1-3 Policy measures since the disaster

1-1-4 The next steps

Chapter 2 Overview of the Nuclear Disaster and Its Countermeasures

1-2-1 Overview of the nuclear disaster

1-2-2 Measures against the nuclear disaster

Part 2 Major Disasters Since 2010 and the Countermeasures for Them

Part 3 Overview of Measures Taken on Disaster Management in 2009 and Plans for Disaster Management in 2011

Chapter 1 Overview of Measures Taken on Disaster Management in 2009

Chapter 2 Plan for Disaster Management in 2011

Part 1 The Great East Japan Earthquake
Chapter 1 Overview of the Earthquake and Tsunami, and Countermeasures for Them

1-1-1 Overview of the earthquake and tsunami disaster

1-1-1-1. Overview of the earthquake and tsunami

o On 11 March 2011, at 14:46, an earthquake of magnitude 9.0 occurred offshore at Sanriku, 130km east-southeast of the Ojika Peninsula. This was the largest earthquake observed in Japan's history.

⇒ Seismic intensity level was measured as 7 (maximum) in the northern area of Miyagi Prefecture. The seismic ground motion was observed in a wide area in Japan from Hokkaido to Kyushu, and was felt most acutely in East Japan.
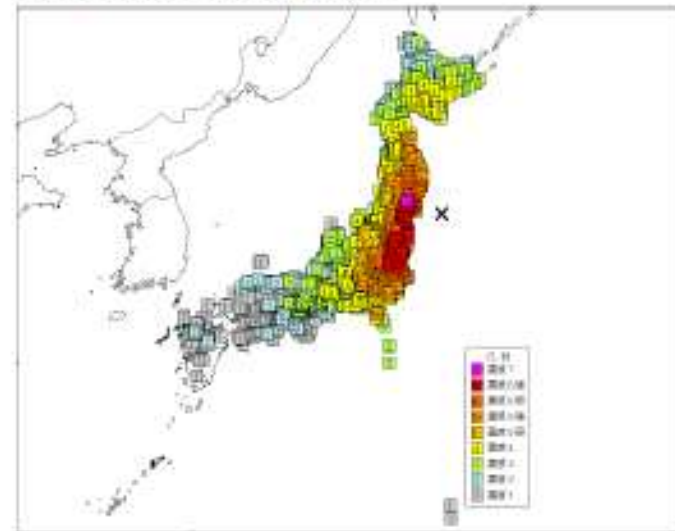
Figure 1. Seismic intensity of the Off the Pacific Coast of Tohoku Earthquake

o The earthquake generated a massive tsunami.

* The recorded maximum height of the tsunami tide was 9.3m (Soma City, Fukushima Prefecture)

* The run-up height of the tsunami wave was recorded at 40.5m, the highest ever observed in Japan.

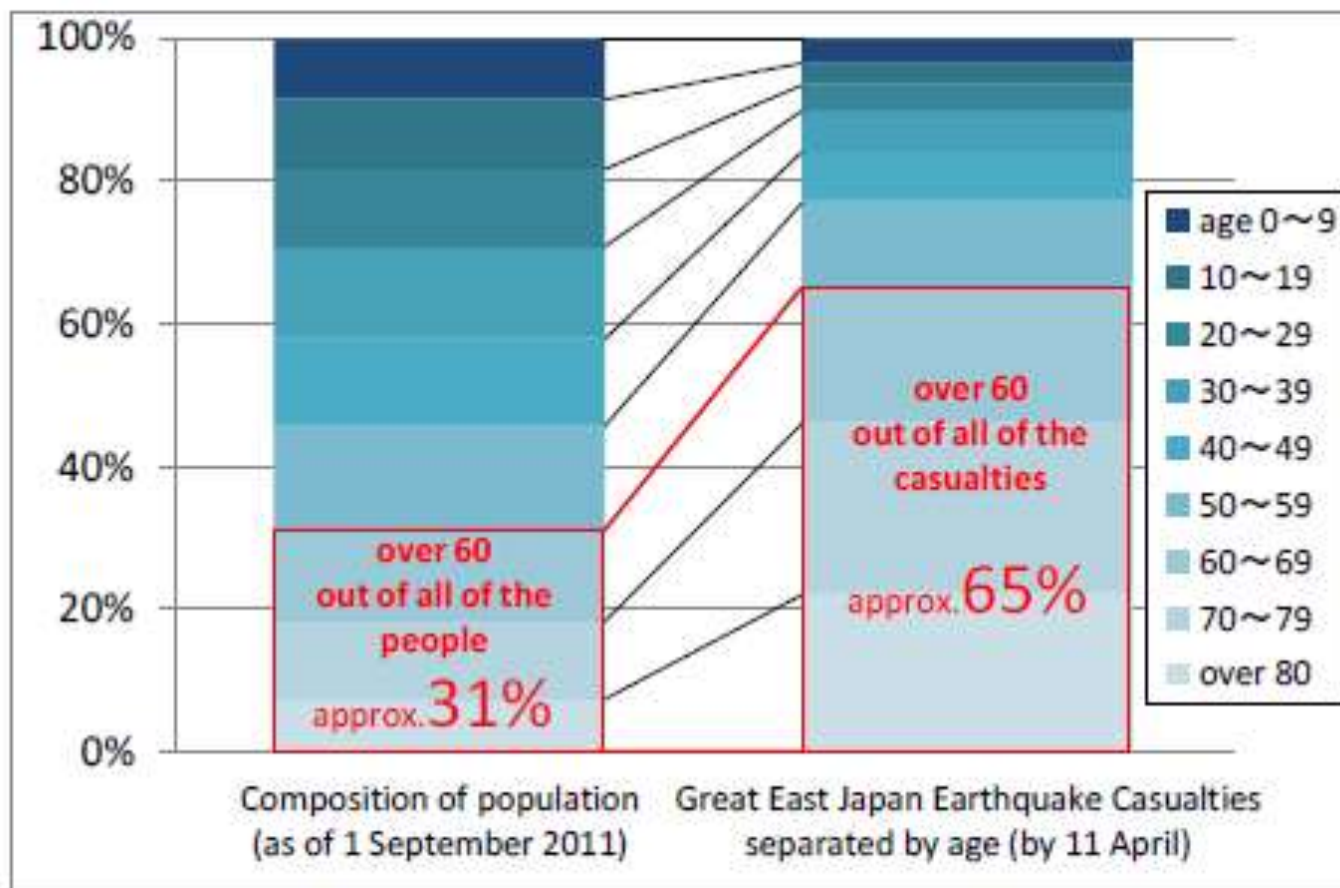⇒ Large tsunami waves were observed all over Japan.

Part 1 The Great East Japan Earthquake
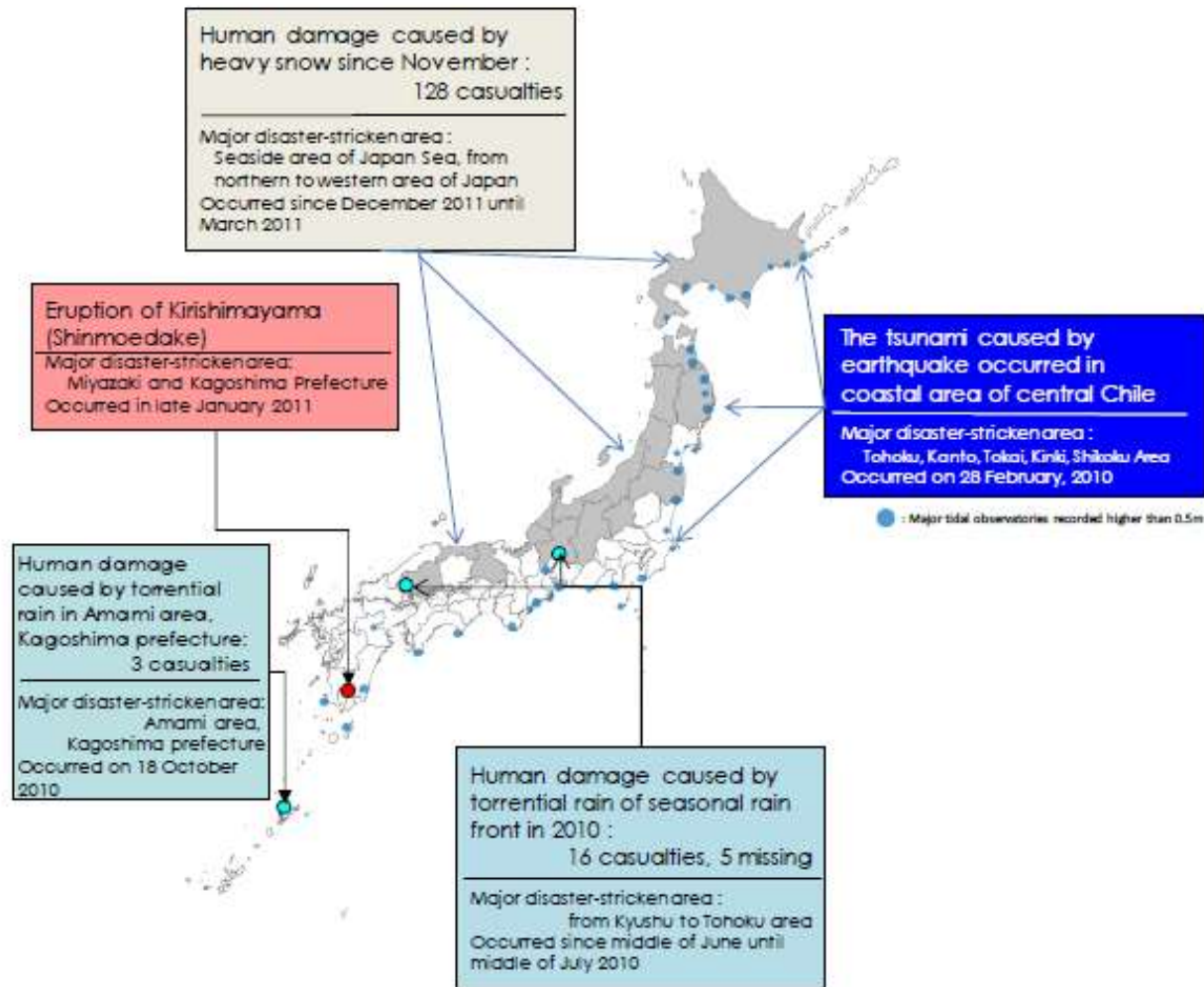## Chapter 1 Overview of the Earthquake and Tsunami, and Countermeasures for Them

Figure 3. Comparison of the number of casualties and the area population by age

Part 2 Major Disasters Since 2010 and the Countermeasures for Them

Part 2   Major Disasters Since 2010 and the Countermeasures for Them

○ Disasters such as torrential rains in rainy season, torrential rain in Amami, eruption of Kirishimayama and heavy snowfall occurred.

Human damage caused by heavy snow since November :
128 casualties

Major disaster-stricken area :
  Seaside area of Japan Sea, from
  northern to western area of Japan
Occurred since December 2011 until
March 2011

Eruption of Kirishimayama
(Shinmoedake)
Major disaster-stricken area:
  Miyazaki and Kagoshima Prefecture
Occurred in late January 2011

The tsunami caused by earthquake occurred in coastal area of central Chile

Major disaster-stricken area :
  Tohoku, Kanto, Tokai, Kinki, Shikoku Area
Occurred on 28 February, 2010

● : Major tidal observatories recorded higher than 0.5m

Human damage
caused by torrential
rain in Amami area,
Kagoshima prefecture:
3 casualties

Major disaster-stricken area:
  Amami area,
  Kagoshima prefecture
Occurred on 18 October
2010

Human damage caused by
torrential rain of seasonal rain
front in 2010 :
16 casualties, 5 missing

Major disaster-stricken area :
  from Kyushu to Tohoku area
Occurred since middle of June until
middle of July 2010

White Paper (防災白書Bosai Hakusho)

Example   Contents of the Thailand White Paper

Table of Contents

Foreword

Chapter 1 The Topography and Climate of Thailand

Chapter 2 Organization Structure and Disaster Management in Thailand
- Disaster Management System in Thailand
- Disaster Organization Structure

Chapter 3 Natural Disaster Report
- Disaster Situation during 2002–2006
- Severity Disaster Situation in 2007

Chapter 4 Global Disaster Situation

Chapter 5 Natural Disaster Management in Thailand
- Disaster Management Activities and Budget in 2007
- Large Scale Disaster Cause Analysis, Achievement and Failure and Trend of Disaster in 2007
- Future Operation Plan

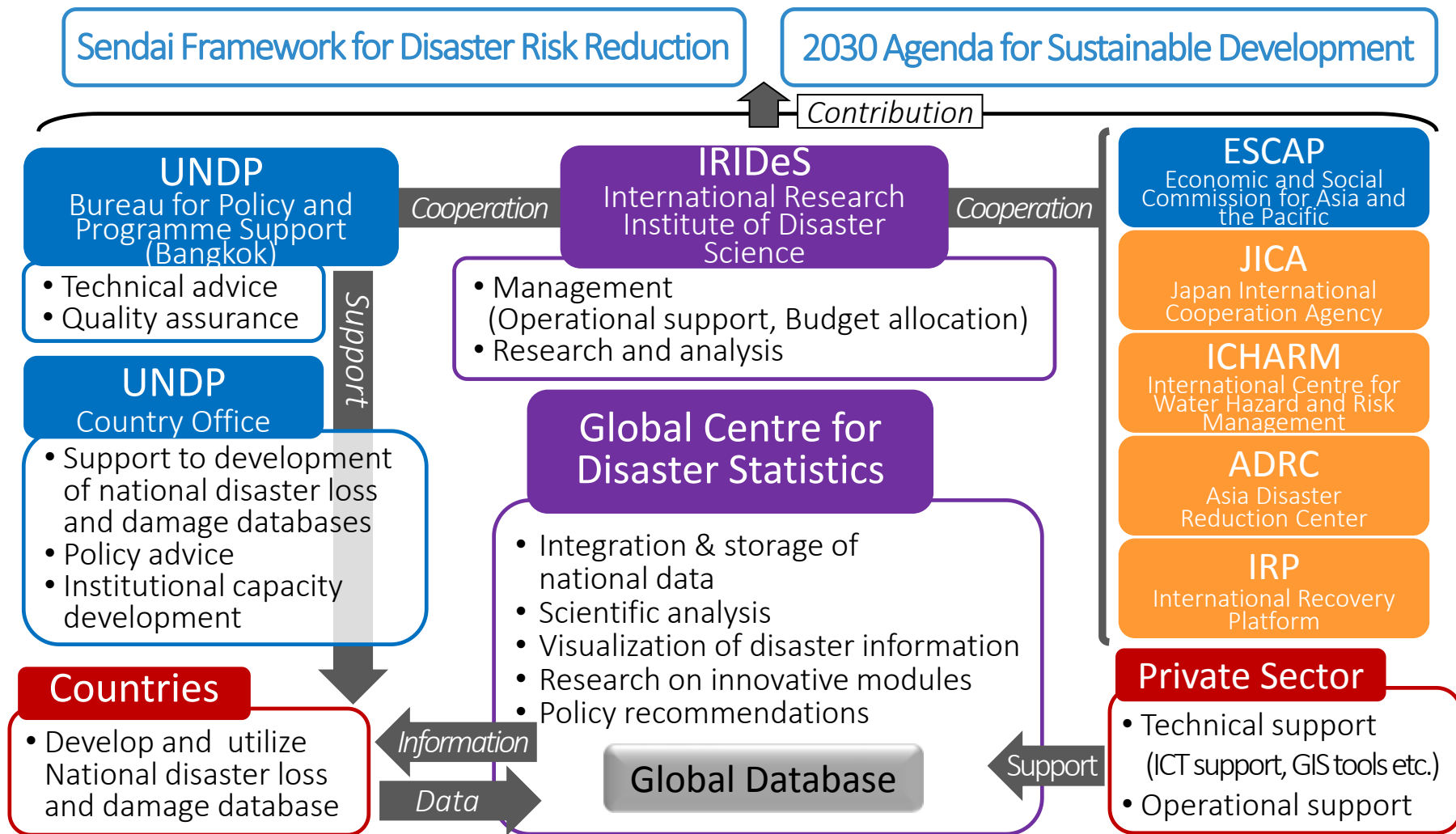Chapter 6 International Cooperation in Disaster Management

Appendix

Bibliography

Source: Thailand White Paper for the year 2550 (Buddhist calendar year, or AD 2007)

Global Centre for Disaster Statistics

Launch of the Global Centre for Disaster Statistics during the WCDRR in Sendai (15 March 2015)

Outline of the Global Centre for Disaster Statistics

- Relationship of the centre and related organization/agencies

Sendai Framework for Disaster Risk Reduction

2030 Agenda for Sustainable Development

Contribution

UNDP
Bureau for Policy and Programme Support (Bangkok)

Cooperation

IRIDeS
International Research Institute of Disaster Science

Cooperation

ESCAP
Economic and Social Commission for Asia and the Pacific

- Technical advice
- Quality assurance

- Management
  (Operational support, Budget allocation)
- Research and analysis

JICA
Japan International Cooperation Agency

UNDP
Country Office

Support

ICHARM
International Centre for Water Hazard and Risk Management

- Support to development of national disaster loss and damage databases
- Policy advice
- Institutional capacity development

Global Centre for Disaster Statistics

ADRC
Asia Disaster Reduction Center

- Integration & storage of national data
- Scientific analysis
- Visualization of disaster information
- Research on innovative modules
- Policy recommendations

IRP
International Recovery Platform

Countries

Private Sector

- Develop and utilize National disaster loss and damage database

Information

Data

Global Database

Support

- Technical support
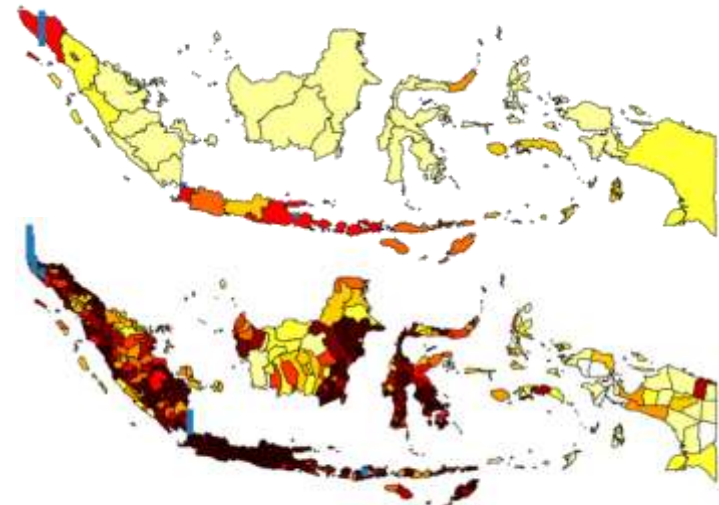 (ICT support, GIS tools etc.)
- Operational support

DesInventar platform

- Based on inputs from the local officials

- Web based platform to output simple graph and map

- Some country has its own database based on DesInventar
 (example: Indonesia)
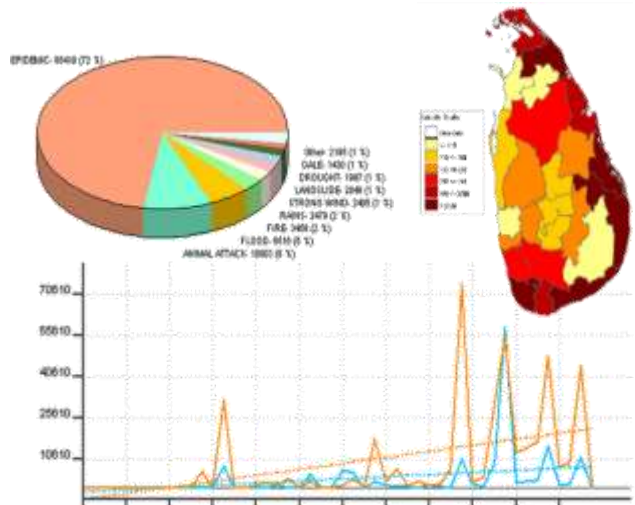
Sample of Database in Sri Lanka (DesInventar platform)

Sample of Database in Indonesia (modified DesInventar platform)

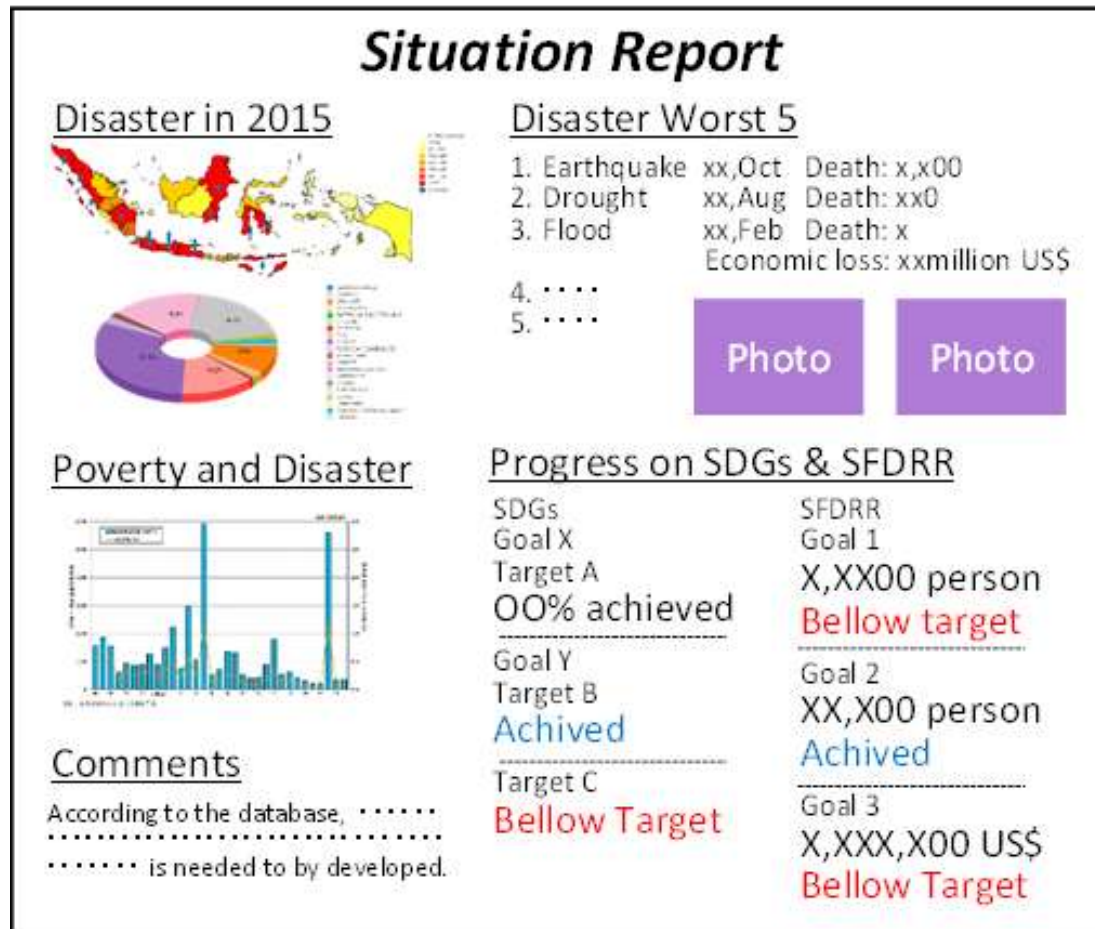# Analysis based on collected disaster loss data

- Macro-economic analysis
  *One example of the analysis to evaluate the effect of pre-disaster investment
- Analysis based on disaggregated data
  *Data disaggregated by social, demographic, and economic characteristics
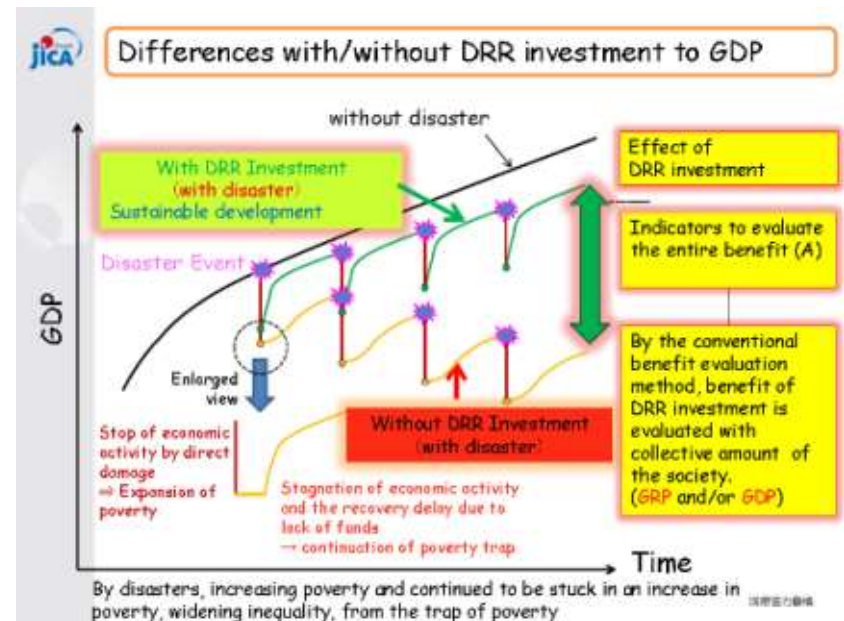
DR²AD model, developed by JICA, to quantitatively estimate the effect of pre-disaster investment to economic development

Point5:
Supporting National/Local Governments

[Image of the Annual Report]

Situation Report

Disaster in 2015

Disaster Worst 5
1. Earthquake xx,Oct Death: x,x00
2. Drought xx,Aug Death: xx0
3. Flood xx,Feb Death: x
Economic loss: xxmillion US$
4. ....
5. ....

Photo Photo

Poverty and Disaster

Comments
According to the database, ·······
································
········ is needed to by developed.

Progress on SDGs & SFDRR

SDGs
Goal X
Target A
OO% achieved

Goal Y
Target B
Achived

Target C
Bellow Target

SFDRR
Goal 1
X,XX00 person
Bellow target

Goal 2
XX,X00 person
Achived

Goal 3
X,XXX,X00 US$
Bellow Target

Contents of the Report

- Temporal and spatial distribution
- Review on the past disasters
- Simulations
- Various correlation analyses based on disaggregated data
- Economic analysis
- SDGs and SFDRR targets/goals-related descriptions

This situation report should encourage national/local officials to input data because this is easily printed out in their offices.

Multistakeholders' gathering
in Sendai
to share practical solutions
in disaster risk reduction
in line with
Sendai Framework for DRR
and
SDGs

50+ Sessions will be organized by:

UNDP, ESCAP, UNESCO, WB, IFRC, UNISDR, etc.

Gov. of Japan, JICA, City of Sendai, Miyagi Prefecture, JST, etc.

Pacific Consultants, Tokio Marine Nichido, Fujitsu, Development Bank of Japan, ELSEVIER, IBM Japan, etc.

NHK, Kahoku Newspaper, etc.

GADRI, NIED, ICHARM, APRU, IRIDeS (Tohoku University), Miyagi Kyoiku Univ., Tohoku Fukushi Univ., Keio University, Institute of Social Safety Science, World Society of Disaster Nursing, Japan Society of Civil Engineering, Global Partnership on Space Technology Applications for Disaster Risk Reduction, Tohoku Ecosystem-Associated Marine Sciences

Japan CSO Coalition for Disaster Risk Reduction, Soka Gakkai International,

Various topics

Afternoon of 25 November, 2017
Pre-event/cultural event

Tohoku Cultural Festival for Recovery

Traditional folk songs, dances, festivals, etc. became a mean to connect destroyed communities for recovery

Study tours and Excursions to tsunami-affected areas

Program

Registration Online

To attend the forum

Participation fee: ￥30,000 / person – early bird deadline 29 September
Students' discount

This includes participating to:

- Cultural festival - 25 Nov (afternoon)
- One-night and two-day excursions to tsunami-affected areas to Aomori, Iwate, Miyagi or Fukushima, 28-29 Nov

www.worldbosaiforum.com