

Application of Disaster Loss and Damage Data

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DAVOS  SENDAI

WORLD BOSAI FORUM

IDRC 2017 in SENDAI

International Disaster and Risk Conference 2017, Sendai, JAPAN

世界防災フォーラム／防災ダボス会議@仙台

November 25-28, 2017

Sendai International Center

Disaster loss and damage data is not just for monitoring the Sendai Targets A-D

The real goal/benefit is for countries to be able to generate sound DRR policy based on evidence

to reduce disaster risks

Developing Disaster Loss and Damage
Data is a challenge but an opportunity to
strengthen the roles of NDMOs

It is to empower the governance!

How could NDMOs
develop or improve it?

Both horizontal and vertical
coordination is necessary

Stick: Laws and regulations

NDMOs are not necessary strong in human and financial resources in comparison with other ministries and agencies within the government

Need a call from higher/highest level of the government to give a task to the NDMOs supported by legislation

Linkage of the Sendai Framework and SDGs should be emphasized

Recommend SDGs-custodians make a policy on this so that the government could appoint NDMOs to coordinate with line ministries

Carrot:

Data gathering and entry is not an easy task, and identifying benefits to local government officers would motivate them for the task

1. Upon the occurrence of disasters, NDMOs/central governments might provide assistance to disaster-hit local government

Accurate damage and loss estimate conducted by local government is essential for requesting such assistance

2. Local governments should also be able to see tangible outcomes

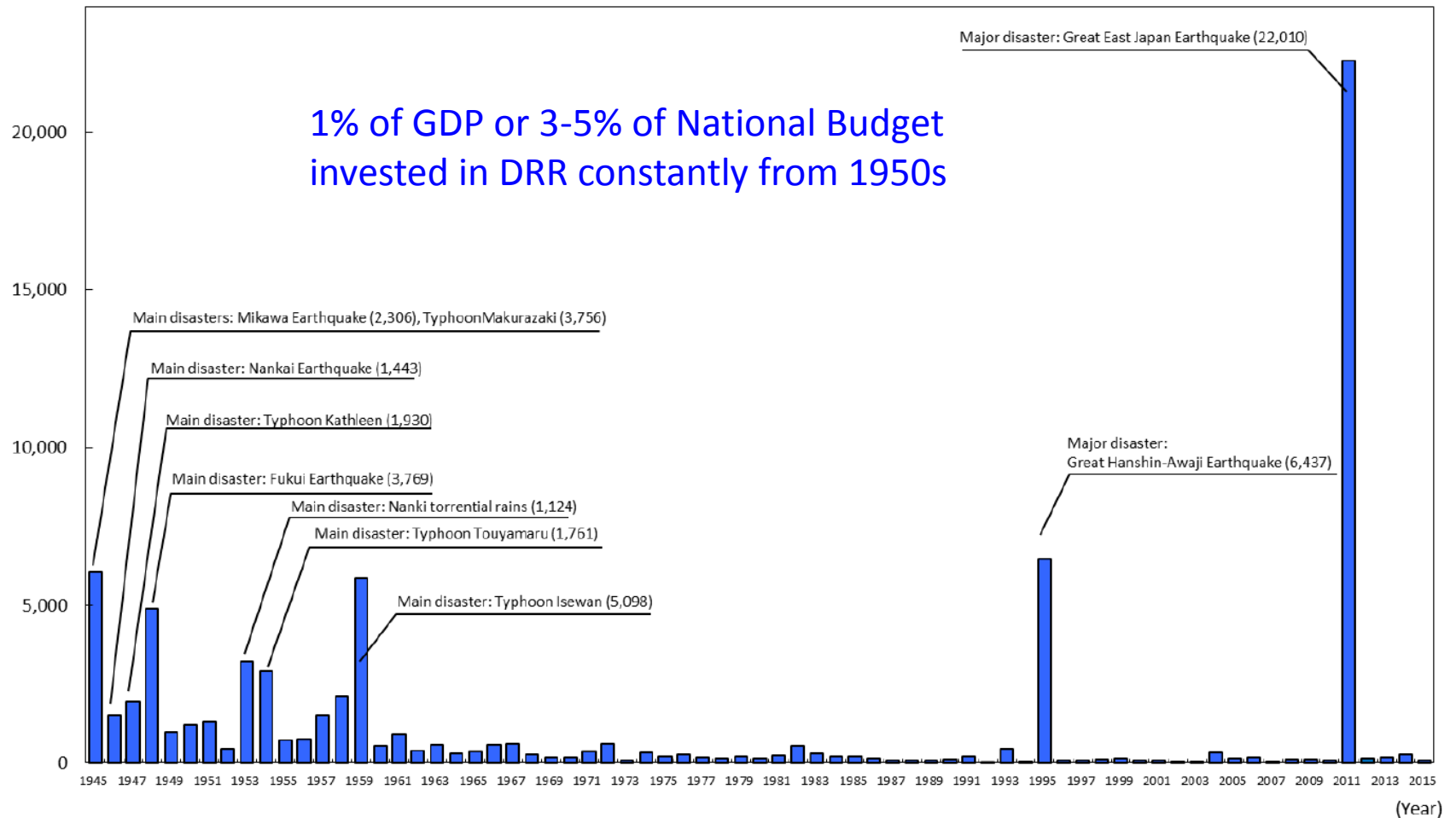
Local Bosai Hakusho (White Paper on DRR)

What we can tell from
the disaster loss and
damage data?

Existing database in Japan

1. “Statistics of water-related disaster damage”
Water and Disaster Management Bureau of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT)
2. “Statistics of disaster damage to public infrastructure”
Water and Disaster Management Bureau of the MLIT
3. “Annual report of disaster damage”
Fire and Disaster Management Agency of the Ministry of Internal Affairs and Communications
4. “Survey on agricultural damage, farm product statistics”
Statistics Department, Minister's Secretariat, Ministry of Agriculture, Forestry and Fisheries
5. “Statistics of disaster damage to farmland and agricultural facilities”
Rural Development Bureau, Ministry of Agriculture, Forestry and Fisheries

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



Number of Fatalities and Missing Persons Resulting from Natural Disasters in Japan, 1945-2015

In 1896, 22,000 killed by tsunami in
the same area
40% death ratio

In 2011, near 20,000 killed by tsunami
4% death ratio

You can assess the impacts of DRR
measures over time

Statistics of water-related disaster damage (since 1961)

- Actual damage caused by water-related hazards such as floods, landslides, storm surges, tsunamis, etc.

Damage to General Properties

buildings, household commodities, machineries for businesses, agricultural products



Damage to Assets for Public Services

Transportation, communication, etc

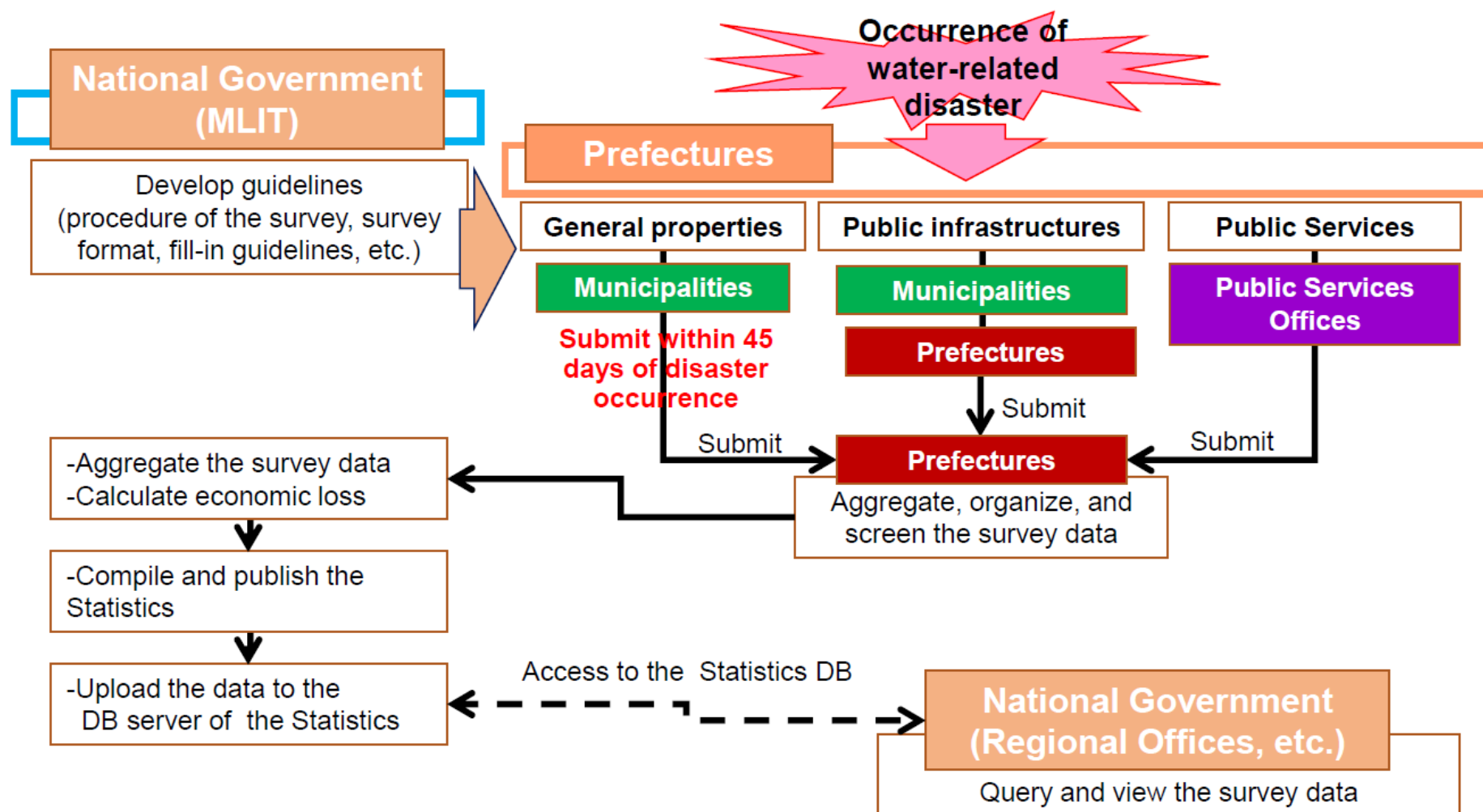


Damage to public Infrastructures

- Costs for recovery works, etc



Statistics of water-related disaster damage (since 1961)



Utilization of the statistics :

- Estimation of Total Economic Loss

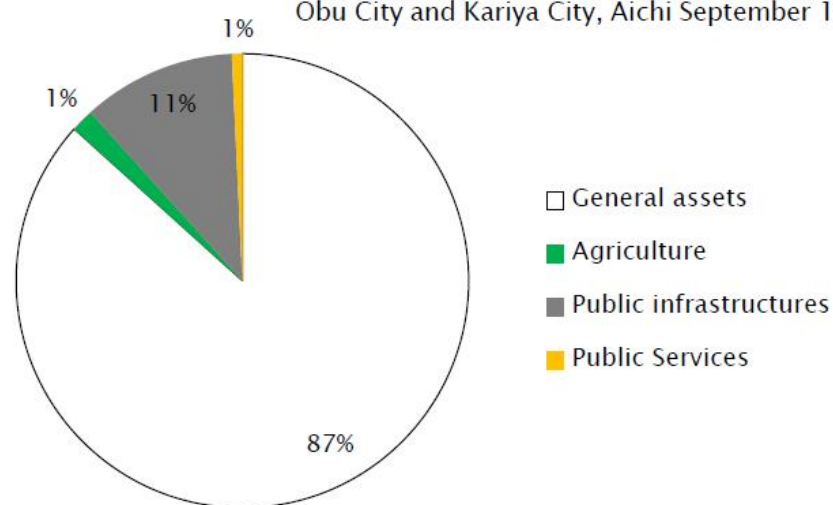
Tokai Storm on September 11-13 2000



Nishi-Biwajima, Aichi in Shinkawa river



Obu City and Kariya City, Aichi September 12, 2000

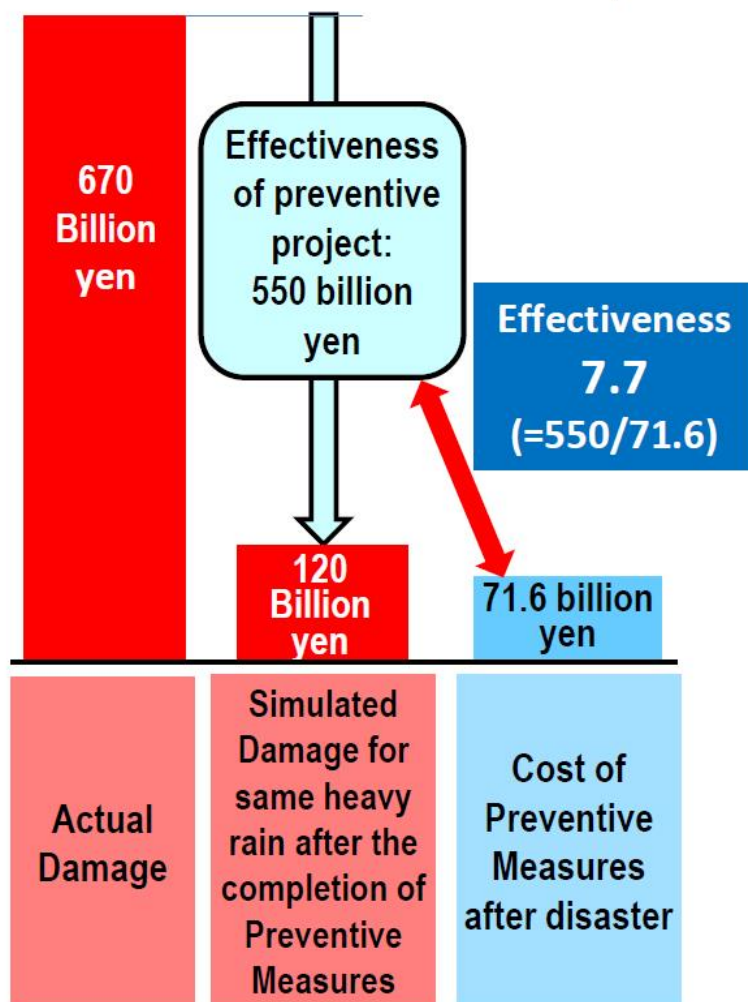


Total economic loss
771,492 million JPY

Utilization of the statistics :

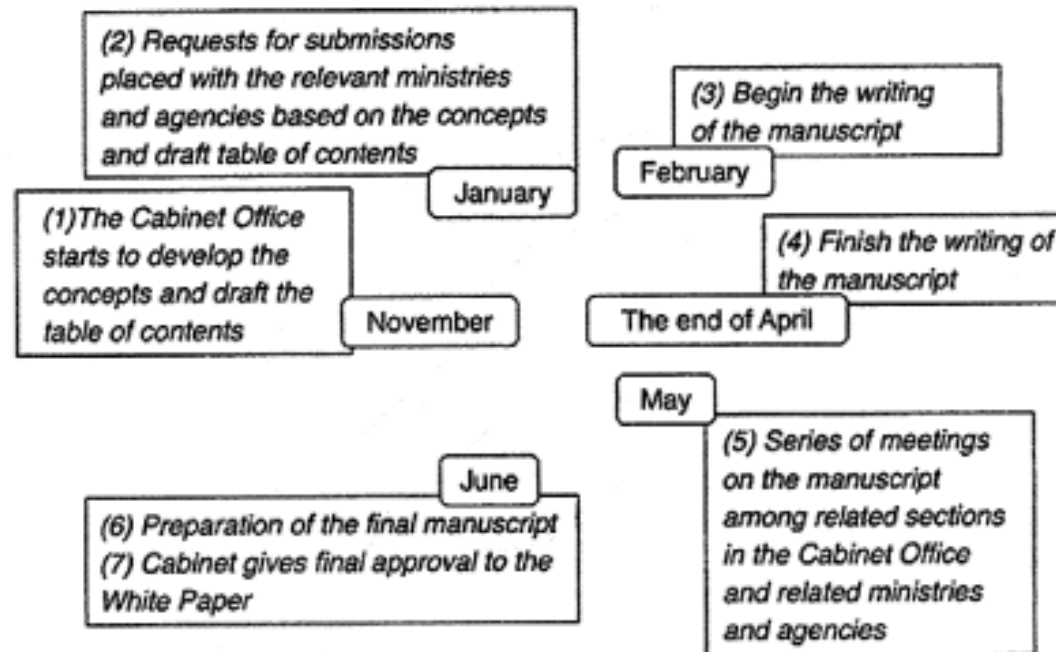
- Identification of Effects of Preventive Measures

The case of Tokai Storm on September 11-13 2000



Inundation in Nishibiwajima Town

White Paper on Disaster Management (防災白書Bosai Hakusho) which is to review DRR policy for previous year(s) since 1963 based on the Basic Act on Disaster Control Measures in 1961



Year-round schedule for the White Paper

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

- 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.

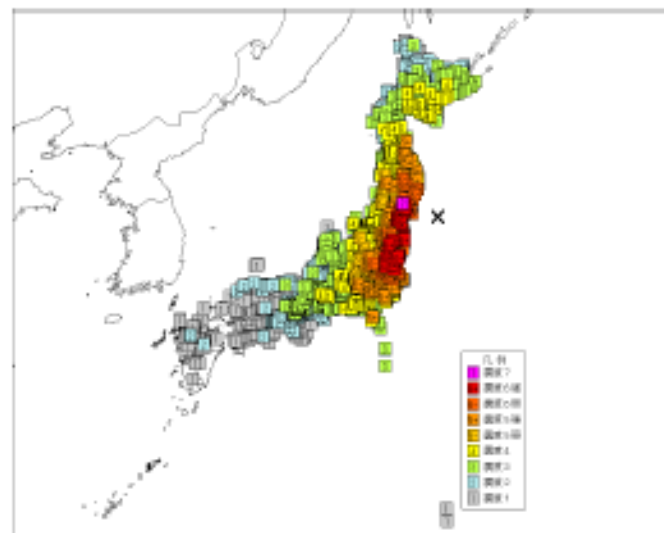
- The earthquake generated a massive tsunami.

* 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.

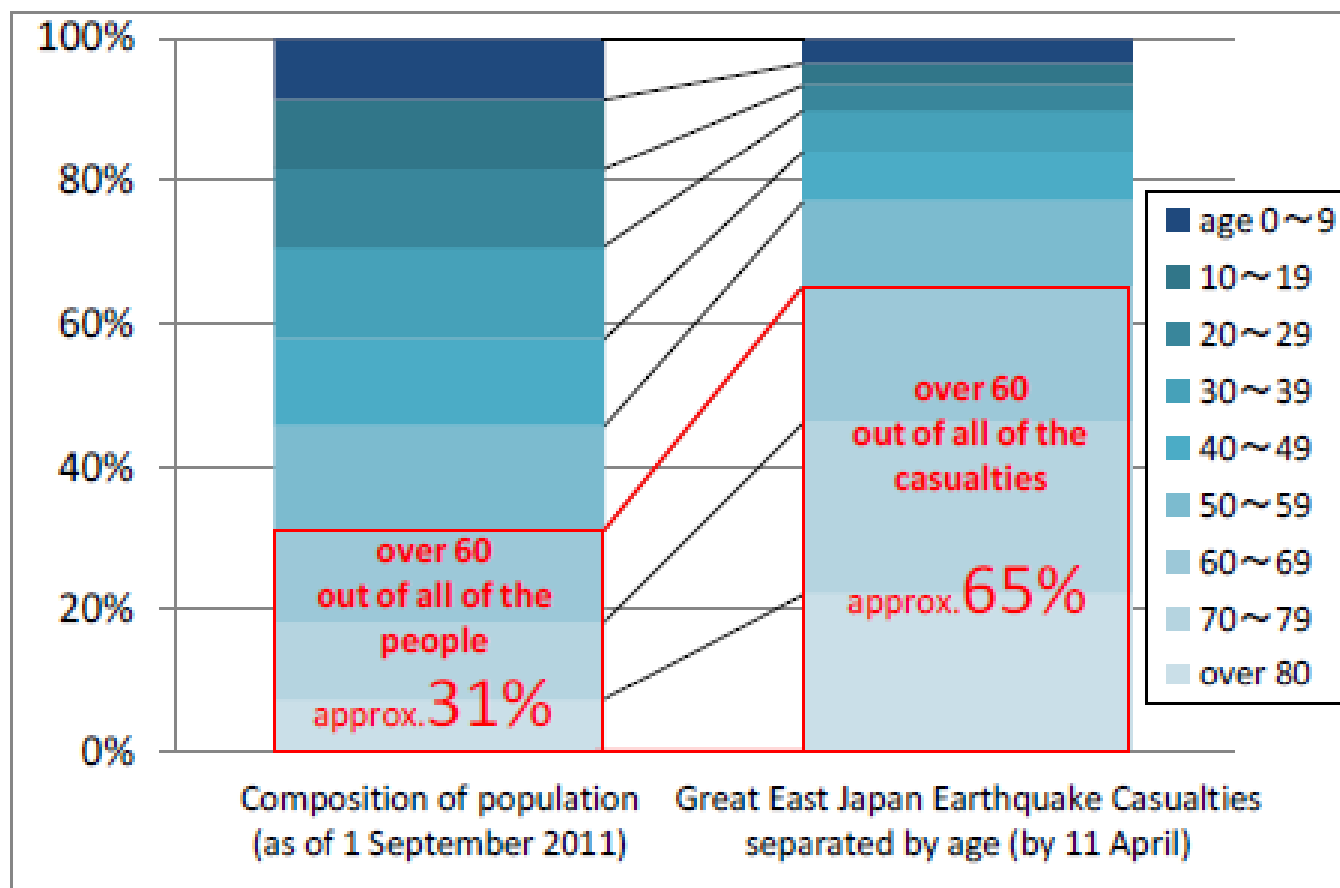
Figure 1. Seismic intensity of the Off the Pacific Coast of Tohoku Earthquake



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



Case of Minami-sanriku, Miyagi Pref.

What are these numbers?

Population data in Minami-sanriku as of February 2011

17,666
789

940
112

5.3%
14.0%

[www.bousai.go.jp/kyoiku/panf/pdf/
WP2017 DM Full Version.pdf](http://www.bousai.go.jp/kyoiku/panf/pdf/WP2017_DM_Full_Version.pdf)

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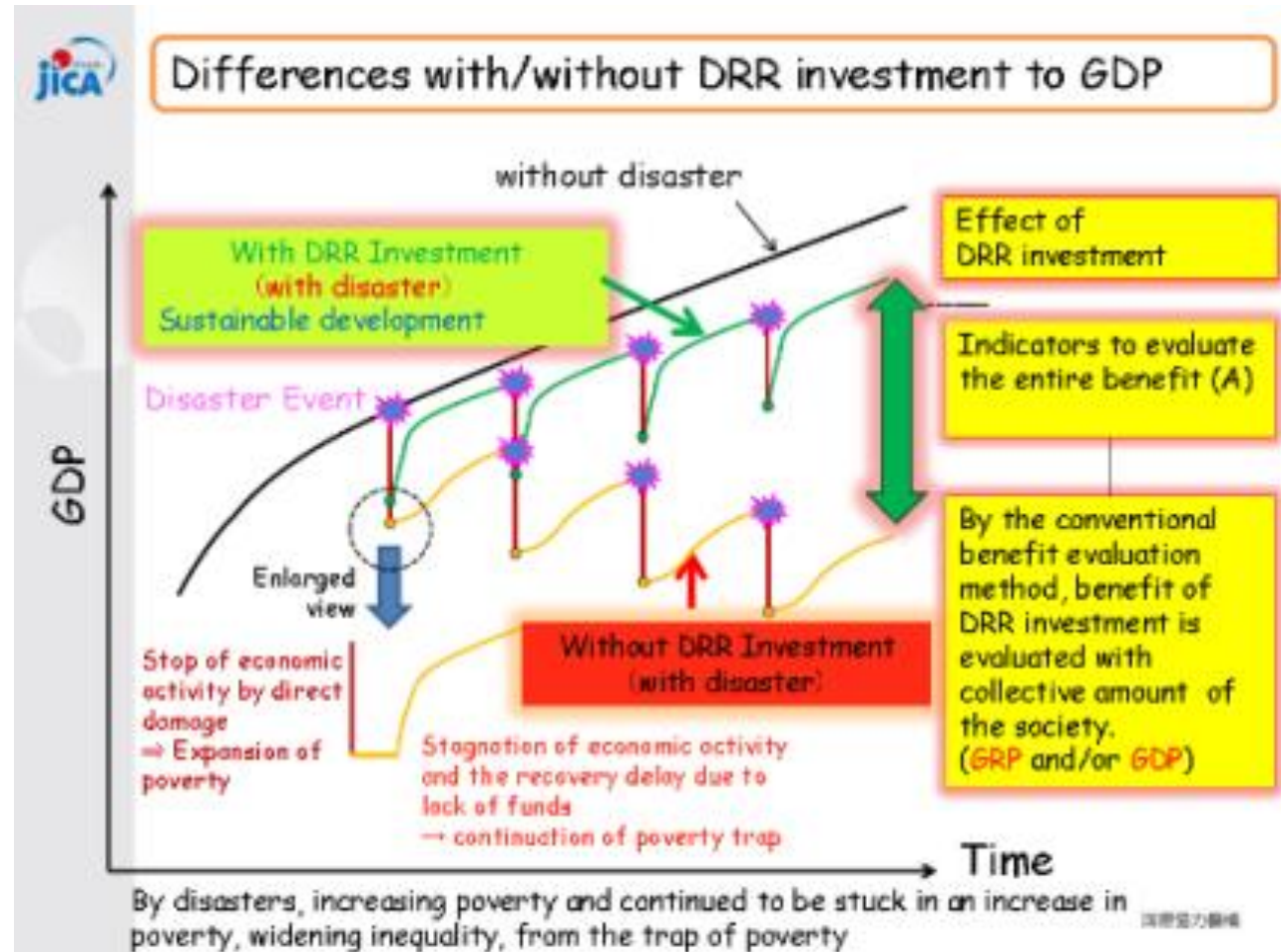
Google: bosai hakusho

White Paper (防災白書Bosai Hakusho) JICA project to Develop Thailand White Paper on DRR in 2007

Example

<u>Table of Contents</u>
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

- 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

Global Centre for Disaster Statistics

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



Global Centre for Disaster Statistics (GCDS)

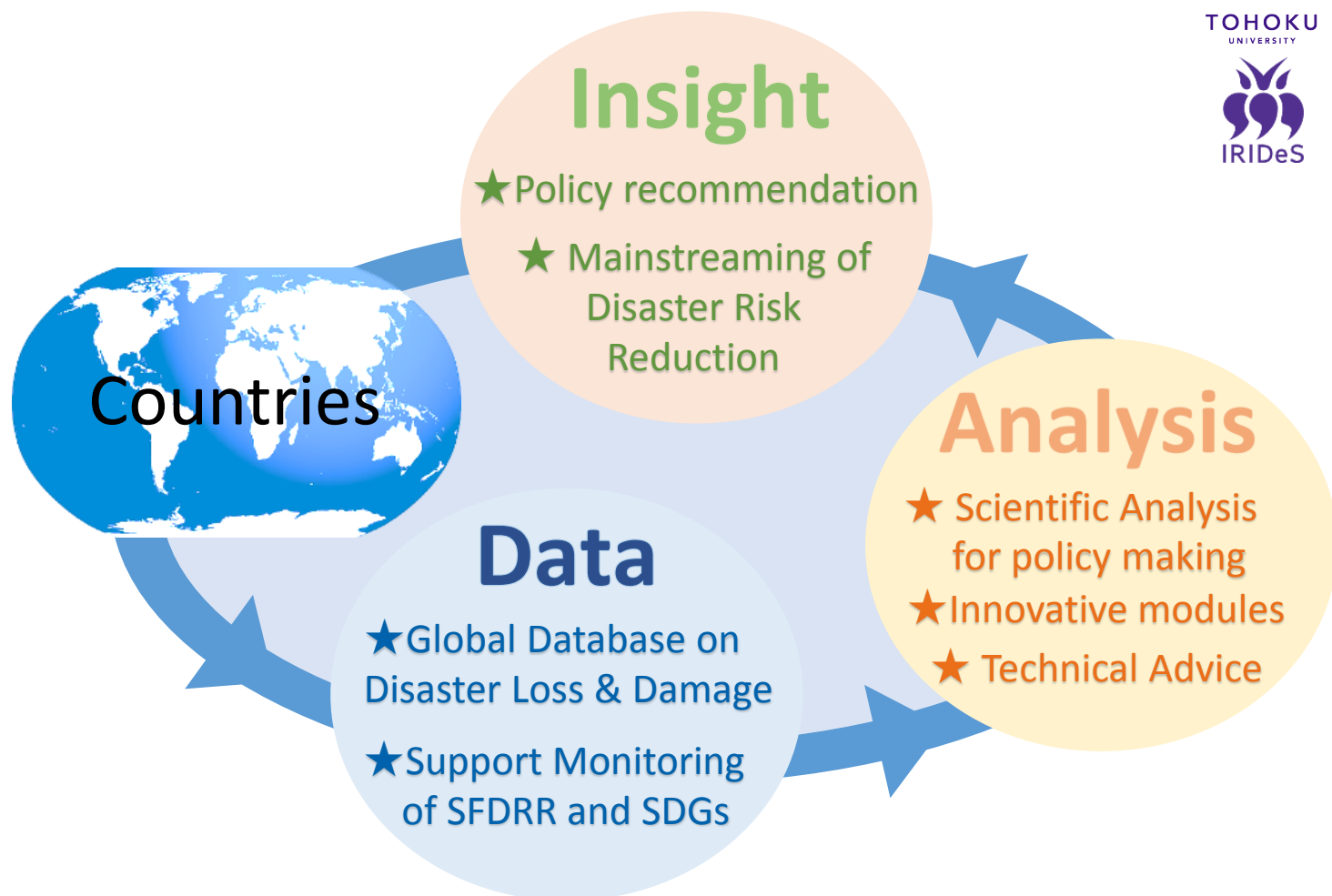
FUJITSU



TOHOKU
UNIVERSITY



*Empowered lives.
Resilient nations.*



Introduction

United Nations Development Program (UNDP) and the International Research Institute of Disaster Science (IRIDeS) at Tohoku University jointly announced the establishment of the Global Centre for Disaster Statistics (GCDS) in March 2015 during the Third UN World Conference on Disaster Risk Reduction (WCDRR) in Sendai.

Voices of support and expectation to this initiative were received, including the UN Secretary-General Ban Ki-moon.



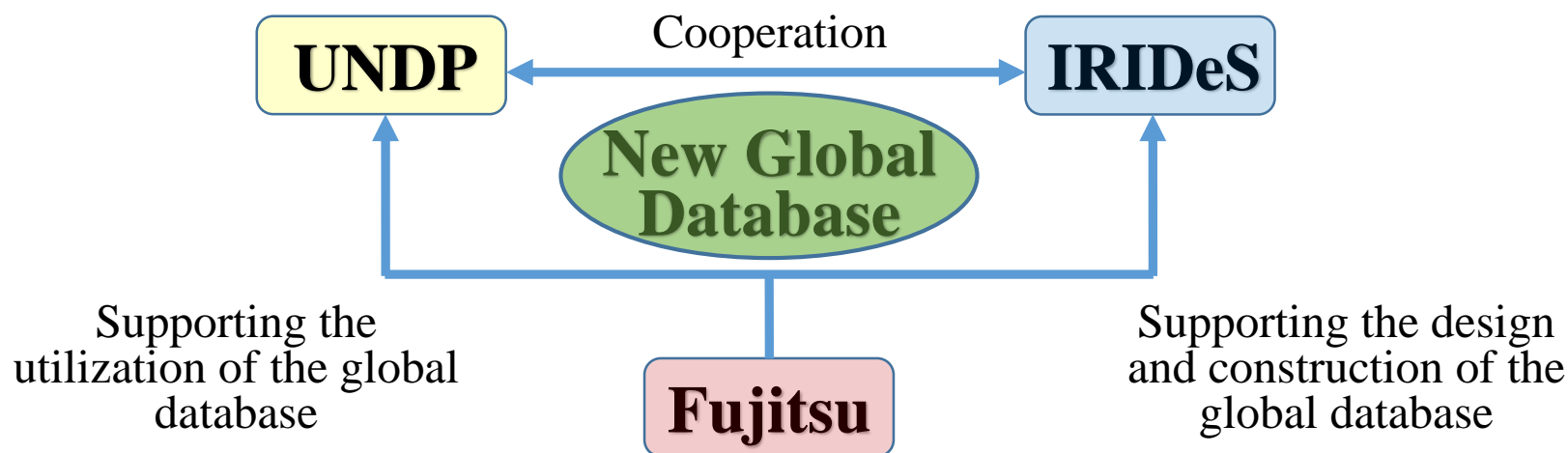
Establishment ceremony of GCDS at the WCDRR



UN Secretary-General Ban Ki-moon's speech at Tohoku University Symposium Forum held in the WCDRR

Introduction

Furthermore, UNDP, IRIDeS, and Fujitsu Limited announced in March 2017 that the three organizations have agreed to form a partnership to build and operate a new global database in the GCDS that will aim to reduce the damage caused by major disasters caused by natural hazards around the world.



Objectives of the GCDS

The GCDS contributes to sustainable development based on risk informed policy making.

- Support the United Nations International Strategy for Disaster Reduction (UNISDR) and countries for monitoring the progress of Sendai Framework for Disaster Risk Reduction and 2030 Agenda for Sustainable Development
- Provide scientific analysis and technical advice on their disaster loss and damage data (by IRIDeS)
- Provide policy advice to build capacities of national/local governments based on their demands (by UNDP, JICA, and partners)

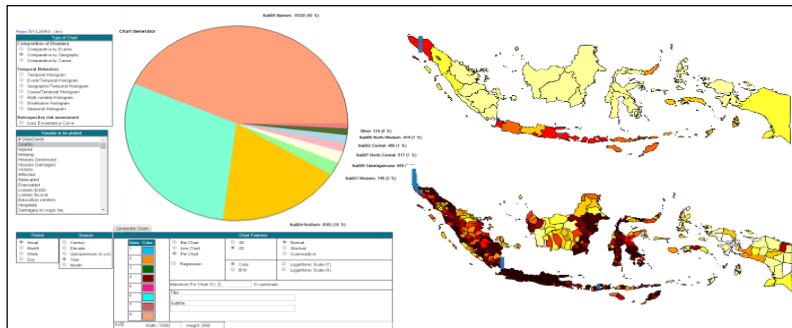
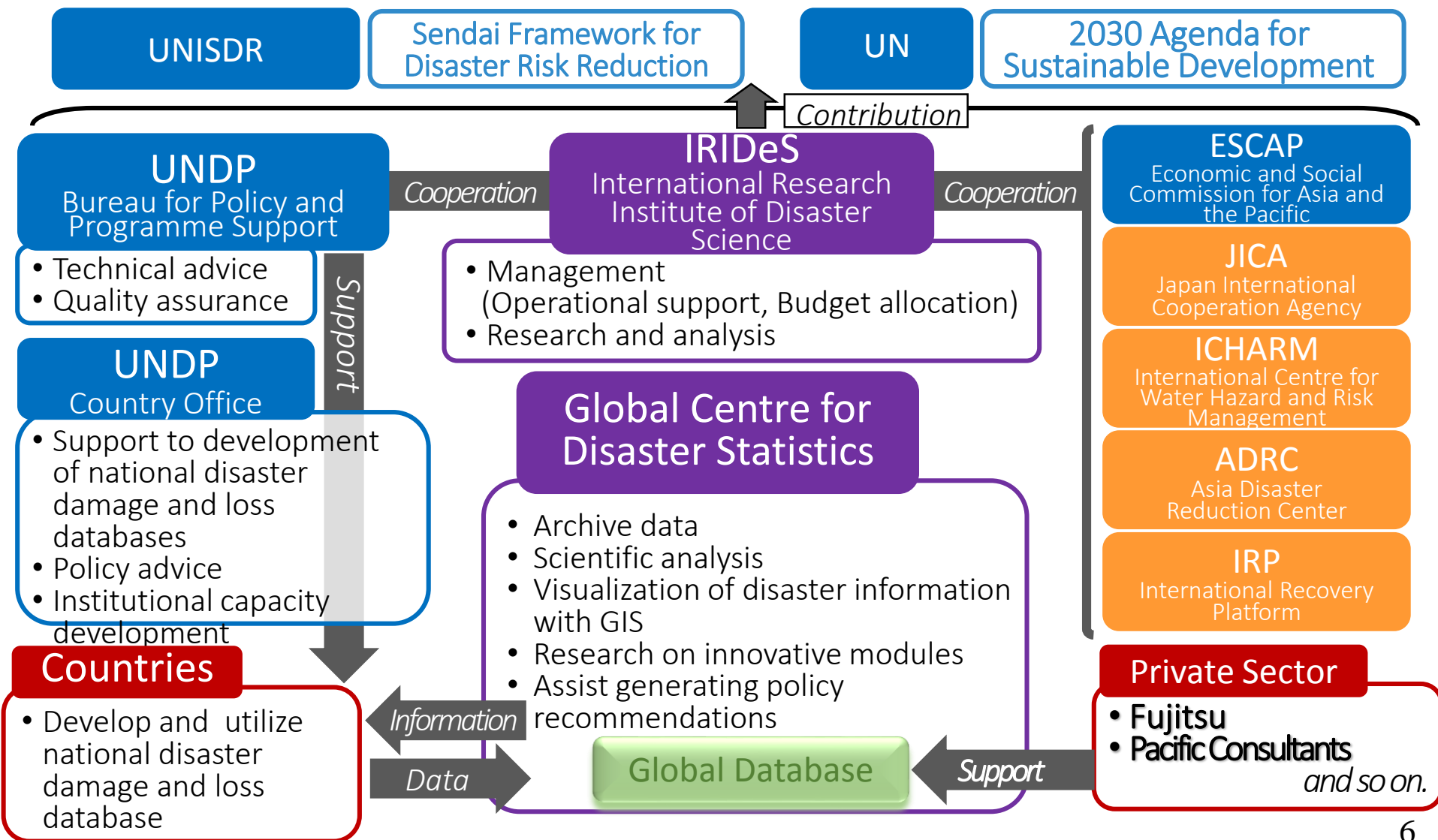


Image of tools to visualize data
Examples from the DesInventer system [right] and DIBI (Indonesian disaster data and information)[left]

Detailed Scheme of the GCDS



Pilot Countries

The GCDS is now conducting case studies in the following seven pilot countries. In addition, Japanese cases will also be examined soon.

Seven Pilot Countries

Indonesia

Sri Lanka

Myanmar

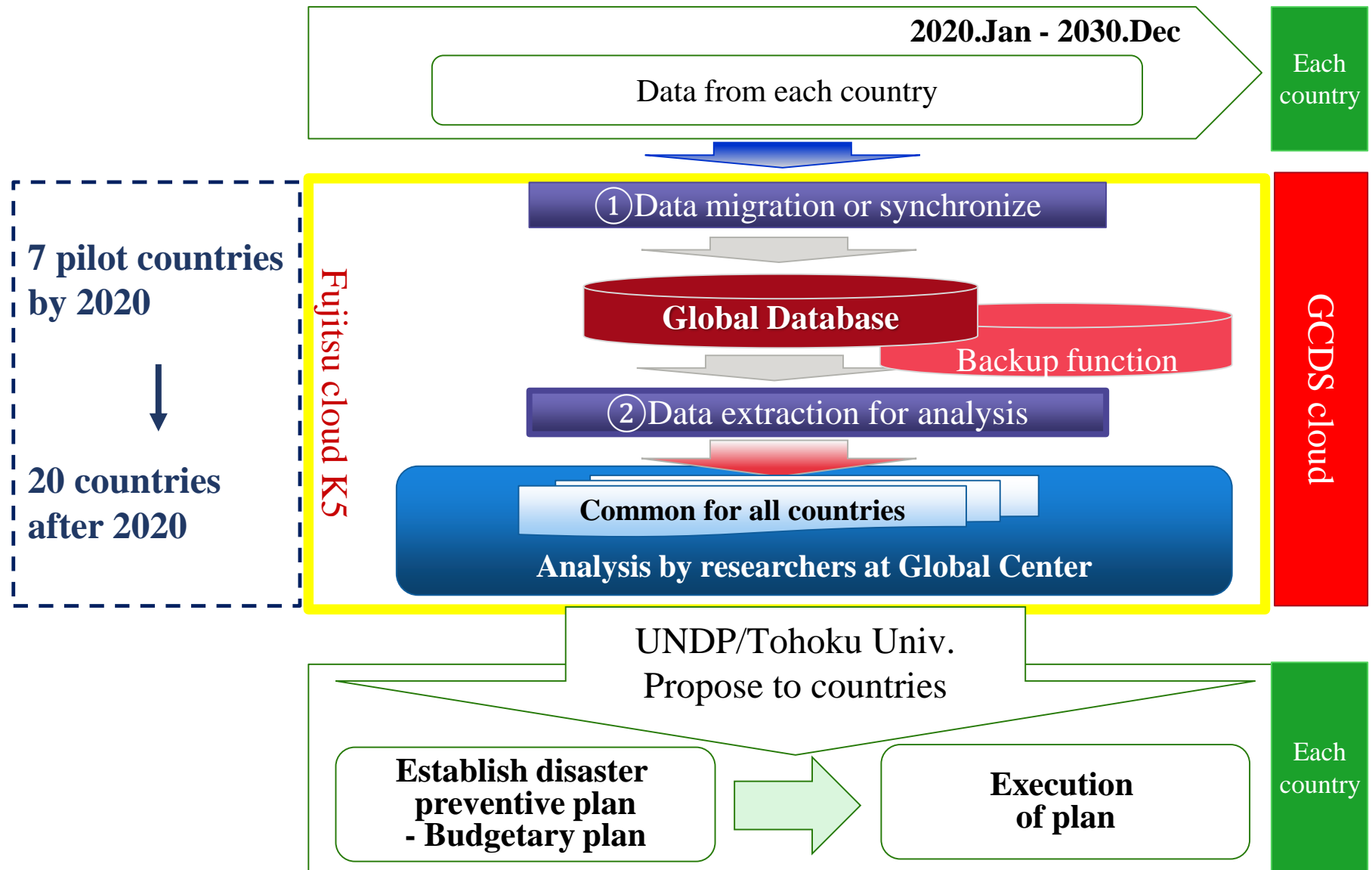
Cambodia

Maldives

Nepal

Philippines

Towards Achievement of the Objectives

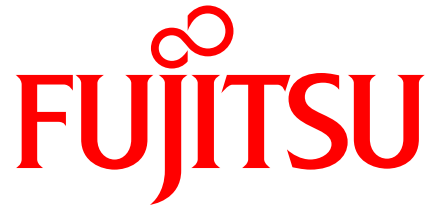


Examples of analysis of the GCDS

The GCDS is now preparing to publish several academic articles regarding disaster statistics within the next year.

The examples of research questions are as follows: (written again)

- ❑ Does poor infrastructure in ordinary times cause more severe damage and loss when disasters occur?
- ❑ Is healthy community resilient to disaster?
- ❑ How can we visualize the regional peculiarity of disaster information?
- ❑ What is the result of regression analysis between tsunami height and fatality ratio?
- ❑ And many more with 100 DRR researchers at the IRIDeS at Tohoku University and partners



Pacific
Consultants

Thank you!



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Resilient nations.*