

BOSAI-TECH 基調講演

東北大学災害科学国際研究所

防災実践推進部門長

2030国際防災アジェンダ推進オフィス 教授

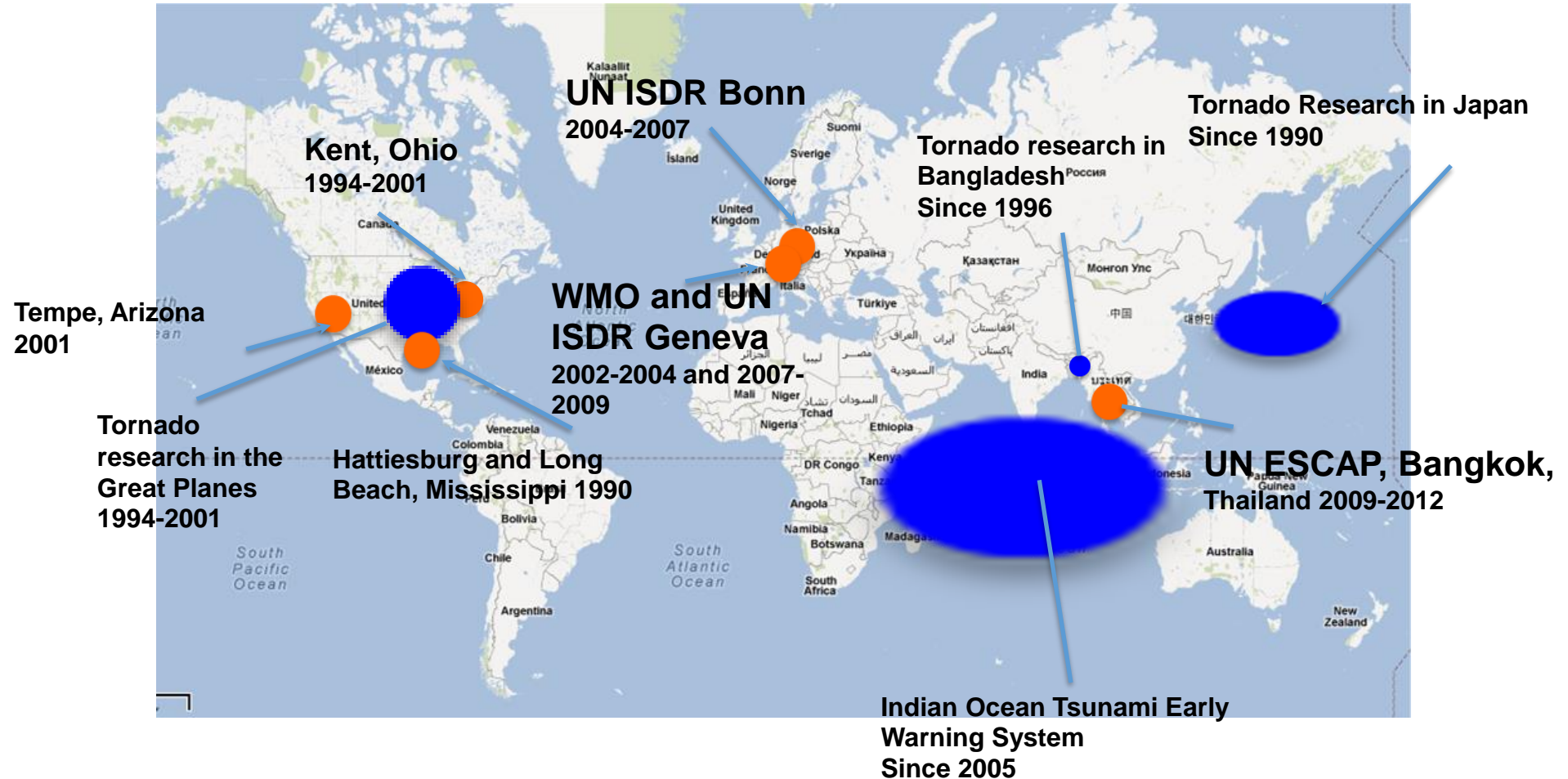
災害統計グローバルセンター長

一般財団法人・世界防災フォーラム代表理事

小野 裕一

小野の研究履歴・職歴

- 過去居住地
- Research/work



- **1994-2001:** Research on tornado disaster risk reduction
- **2002-2004:** World Meteorological Organization (Geneva)
- **2003-2009:** United Nations International Strategy for Disaster Reduction (Geneva-Bonn-Geneva)
- **2009-2012:** United Nations Economic and Social Commission for Asia and Pacific
- **2013-:** International Research Institute of Disaster Science (Tohoku University)

本日のお題：

1. 近年の世界の災害動向
2. 仙台防災枠組等の国際防災アジェンダに基づく国際防災政策について（実施状況、成果、課題等）
3. 防災における非政府・民間セクターの役割・重要性
4. BOSAI-TECHに取り組む企業・自治体等に期待すること

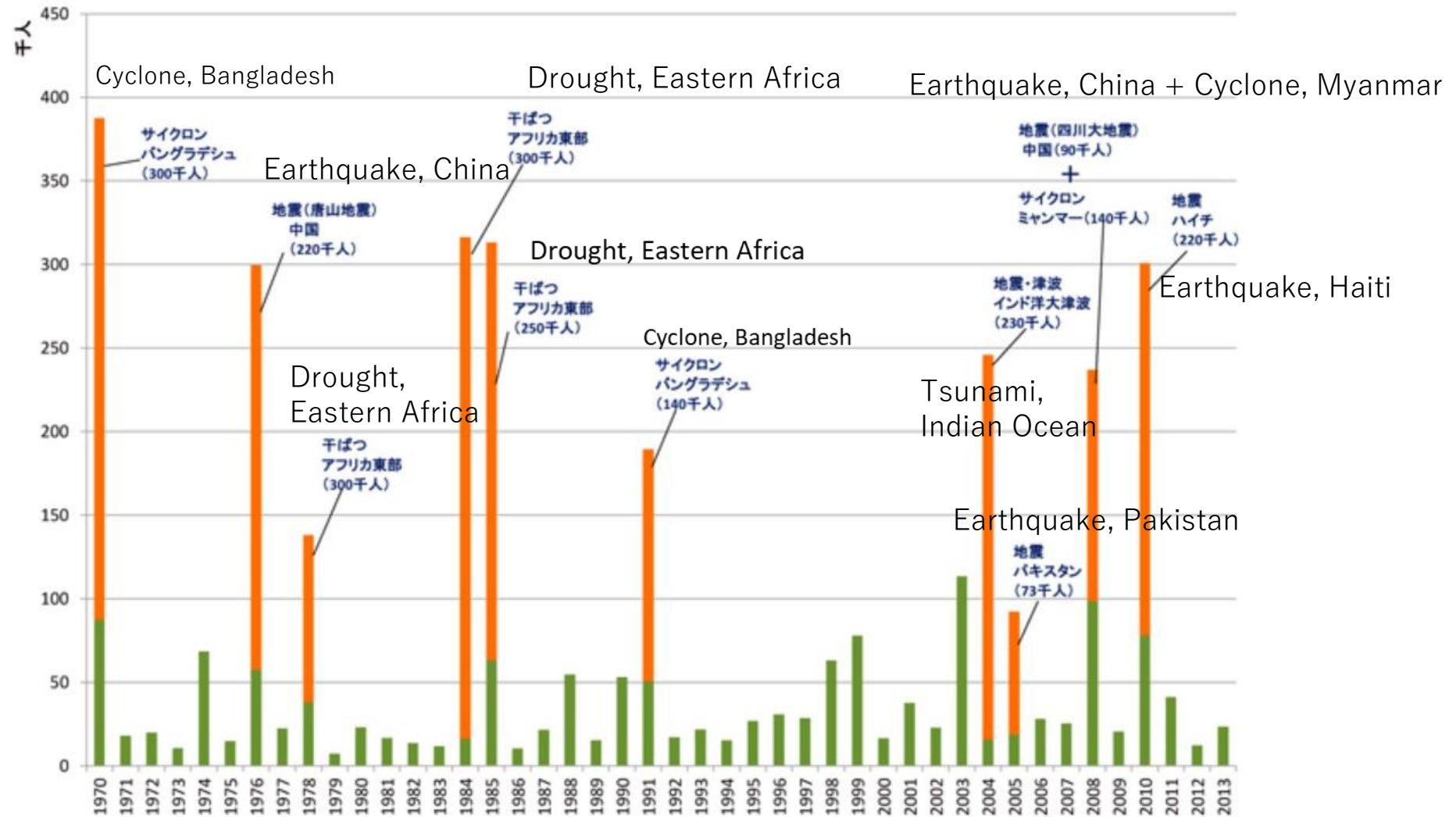
1. 近年の世界の災害動向

本当に災害は増えているか？激甚化しているか？死者は増えているか？経済的被害は？
気候変動の影響か？だとしたらどれくらい気候変動の影響で増えているか？

Global disaster deaths caused by natural hazard since 1970

図表 1

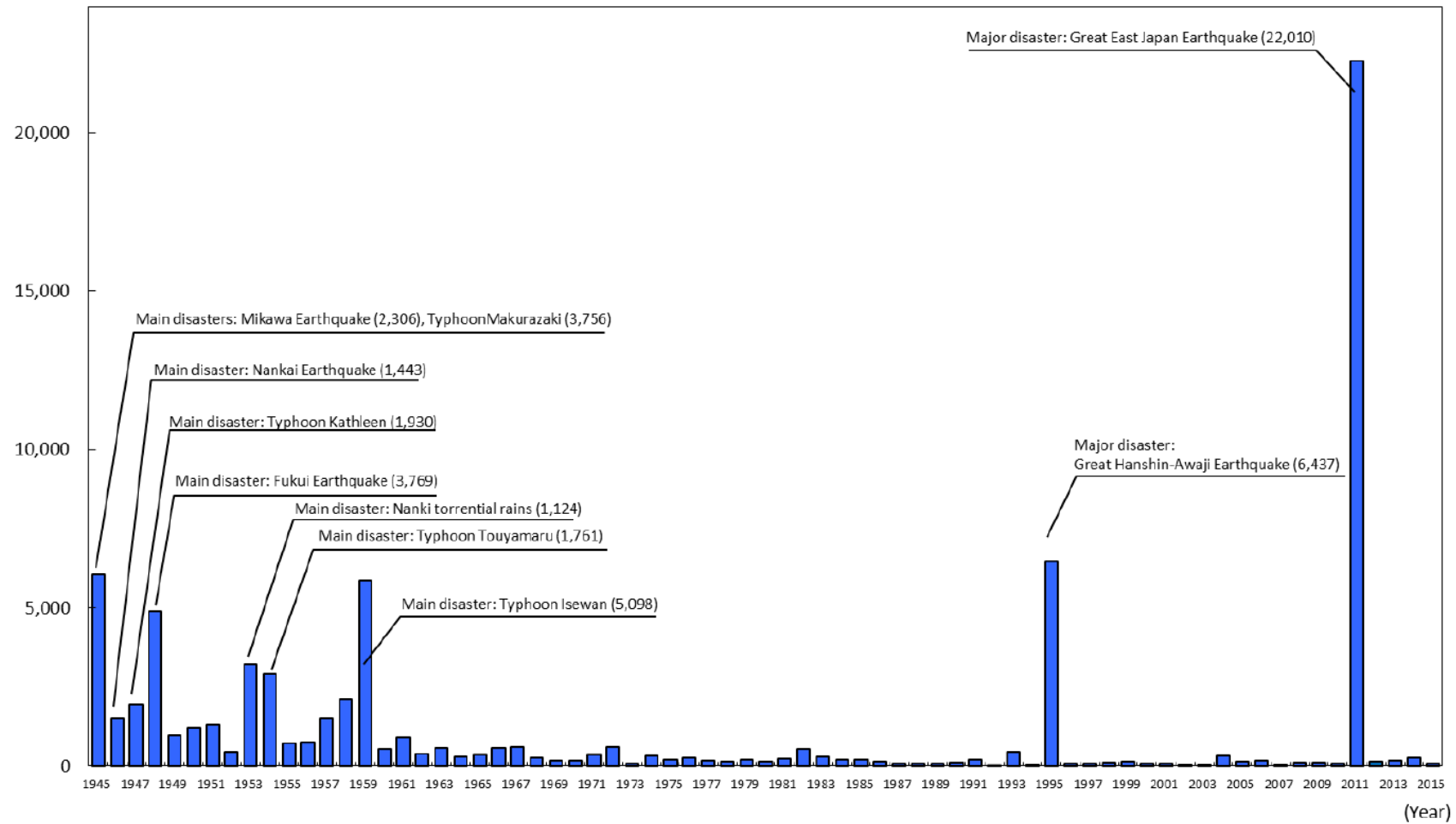
1970年以降の世界における自然災害による人的被害の推移



出典：E M - D A T (The OFDA/CRED International Disaster Database-www.emdat.be-Université Catholique de Louvain-Brussels-Belgium) をもとにアジア防災センター作成。死者及び行方不明者の数

注：■は当該年に発生した災害のうち著しく規模の大きい災害による死者及び行方不明者を示す

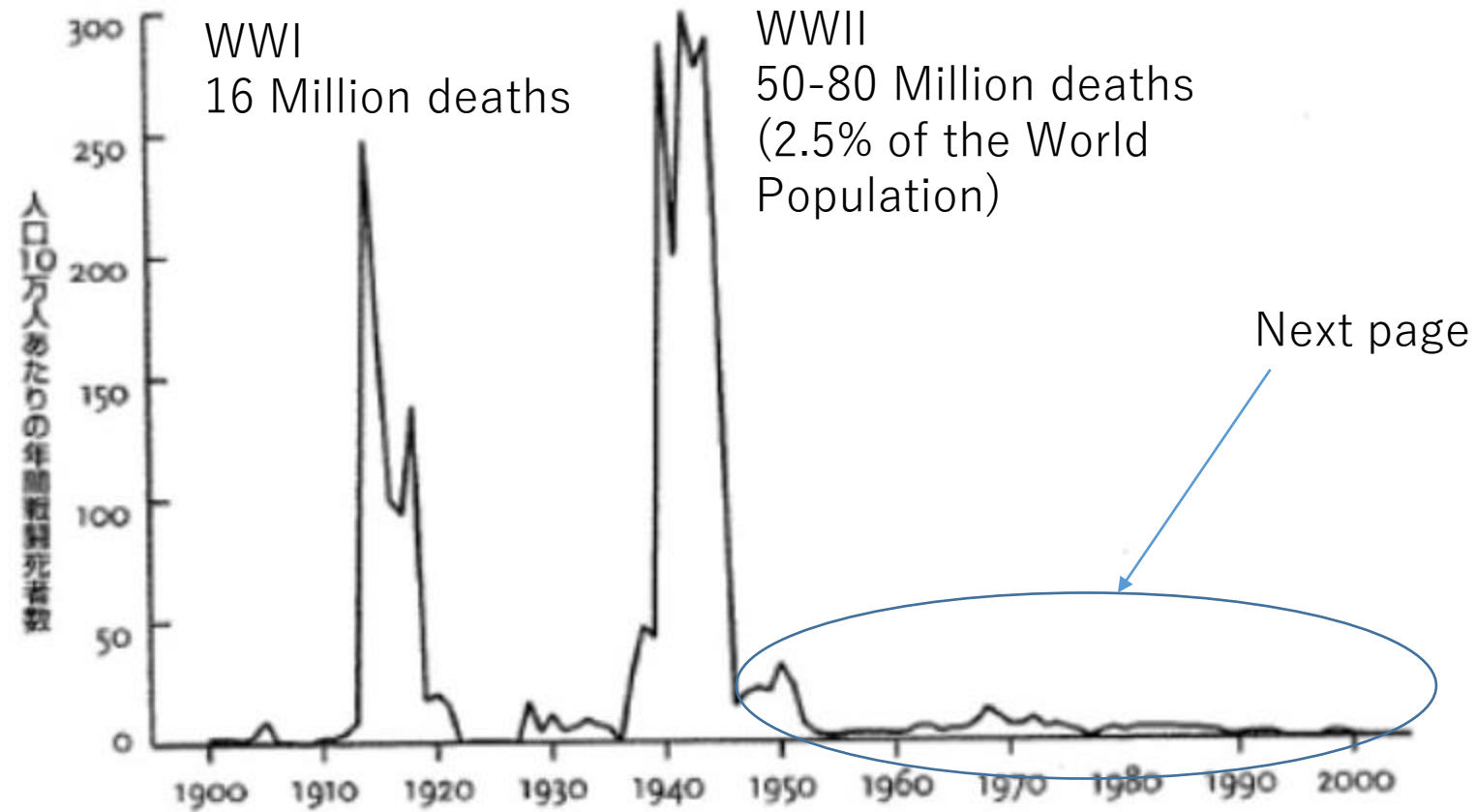
(People) Number of Fatalities and Missing Persons Resulting from Natural Disasters



日本の自然災害での死者・行方不明者数 1945-2015

Deaths caused by conflicts in the 20th Century (deaths per 100,000)

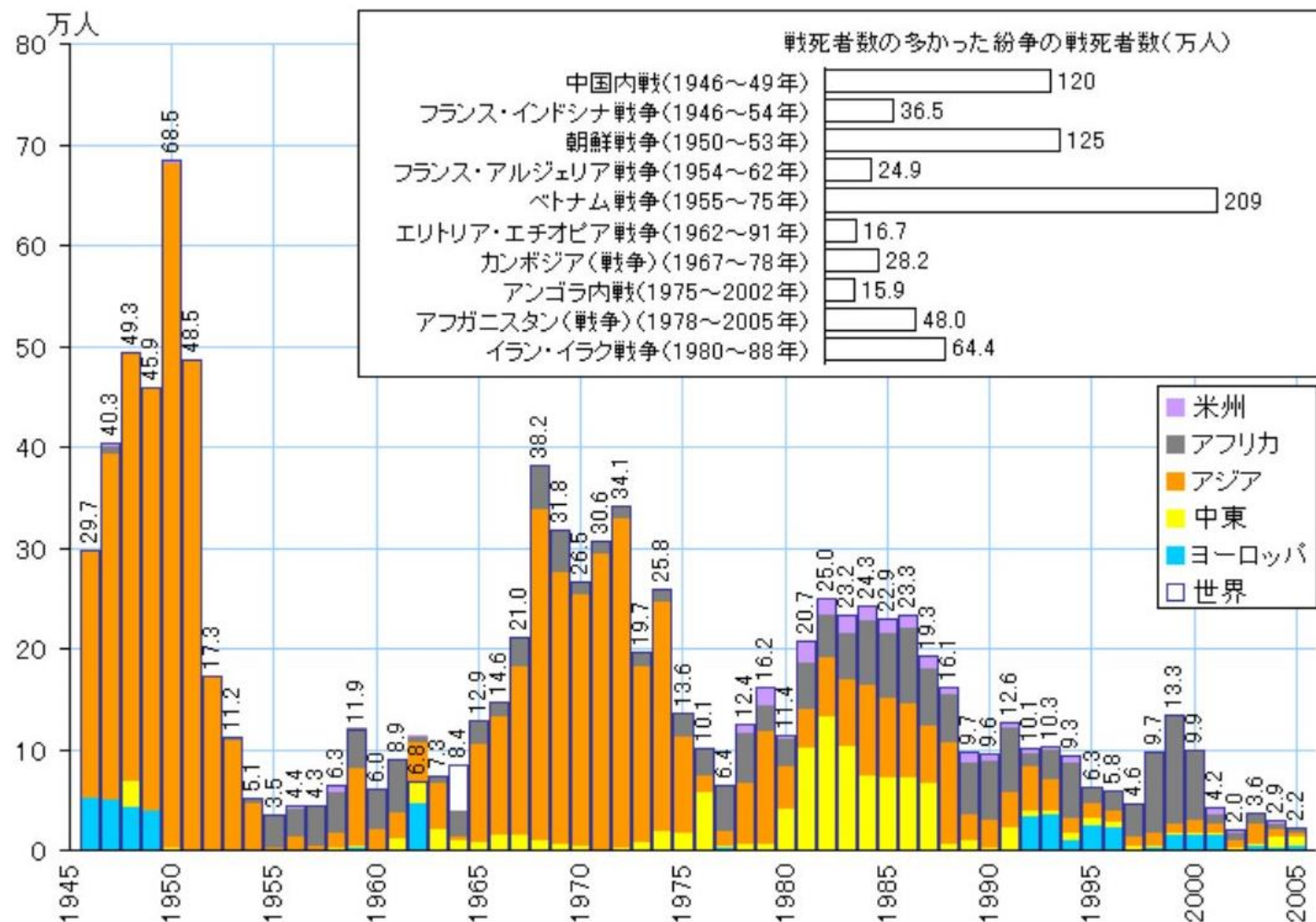
20世紀における武力紛争による戦死者数



(注) PRIOデータに「戦争の関連要因プロジェクト」の1900～1945年データを組み込み世界人口で数値を割って人口当たりの戦死者数をあらわしたもの

(資料) スティーブン・ピンカー「暴力の人類史」上巻p.529(原著2010年)

A HISTORY OF VIOLENCE by Steven Pinker



(注) 国家が当事者の双方または一方である武力紛争(死者25人以上)による戦死者(直接交戦に巻き込まれて死亡した民間人を含む)。年次カウントのズレで世界の値が必ずしも地域の合計に一致しない場合がある。

(資料) Centre for the Study of Civil War (CSCW) at PRIO, The Battle Deaths Dataset version 2.0

世界銀行／人間の安全保障報告プロジェクト「世界銀行アトラス・人間の安全保障はどう守られているか」2009年

2. 仙台防災枠組等の国際防災アジェンダに基づく国際防災政策について（実施状況、成果、課題等）

国連防災機関（UNDRR）



Sendai Framework for Disaster Risk Reduction 2015-2030

I. Preamble

前文

II. Expected outcome and goal

期待される成果と目標

III. Guiding principles

指導原則

IV. Priorities for action

優先行動

Priority 1: Understanding disaster risk

Priority 2: Strengthening disaster risk governance to manage disaster risk

Priority 3: Investing in disaster risk reduction for resilience

Priority 4: Enhancing disaster preparedness for effective response,
and to “Build Back Better” in recovery, rehabilitation and reconstruction

V. Role of stakeholders

ステークホルダー（防災関係者）の役割

VI. International cooperation and global partnership

国際協力とグローバル・パートナーシップ

IV. 優先行動

優先事項 1：災害リスクの理解 (Understanding disaster risk)

- ☆ 関連データの収集・分析・管理・活用
- ☆ 災害が複合的に発生する可能性を含めた災害リスク評価
- ☆ 地理空間情報の活用, 防災教育, 普及啓発, サプライチェーン

優先事項 2：災害リスク管理のための災害リスクガバナンス (Strengthening disaster risk governance to manage disaster risk)

- ☆ 全てのセクターにわたる防災の主流化, 防災戦略計画の採択
- ☆ 関係ステークホルダーとの政府の調整の場, ステークホルダーへの責任と権限の付与

優先事項 3：強靱化に向けた防災への投資 (Investing in disaster risk reduction for resilience)

- ☆ ハード・ソフト対策を通じた防災への官民投資
- ☆ 土地利用, 建築基準

優先事項 4：効果的な応急対応に向けた準備の強化と「より良い復興 (Build Back Better)」 (Enhancing disaster preparedness for effective response, and to “Build Back Better” in recovery, rehabilitation and reconstruction)

- ☆ 災害予警報, 事業継続, 避難場所・食糧・資機材の確保, 避難訓練
- ☆ 復旧・復興段階における基準類, 土地利用計画の改善を含めた災害予防策
- ☆ 国際復興プラットフォーム (IRP) などの国際メカニズム強化

II. 期待される成果と目標

- 今後15年の期待される成果として、「人命・暮らし・健康と、個人・企業・コミュニティ・国の経済的，物理的，社会的，文化的，環境的資産に対する災害リスク及び損失の大幅な削減」を目指す。
- 上記成果を達成するため、「ハザードへの暴露（exposure）及び脆弱性を予防・削減し，応急対応及び復旧への備え強化し，強靱性を強化する，統合されかつ包摂的な，経済，ハード及びソフト，法律，社会，健康，文化，教育，環境，技術，政治及び制度的手段の実施を通じ，新たな災害リスクを予防し，既存の災害リスクを減少させる」とのゴール（goal）を追求する。
- ターゲット（target）：
 - ①死亡者数，②被災者数，③経済的損失，④重要インフラの損害，⑤防災戦略採用国数，⑥国際協力，⑦早期警戒及び災害リスク情報へのアクセス

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.**

For SFDRR's monitoring on global targets

Open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction met 5 times in Geneva during 2015-2016
ジュネーブで公式・非公式の5回の交渉

Tohoku University's GCDS actively participated into the intergovernmental process as a representative of the Government of Japan

In December 2017, UNISDR launched the Technical Guidance for Monitoring and Reporting on Progress in Achieving the Global Targets of the SFDRR



A representative of the GCDS from Tohoku University making a presentation on the occasion of the Open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction - Geneva, Sept. 2015



A representative of the GCDS from Tohoku University making a presentation on the application of disaster loss and damage data - Bonn, December 2017

Technical Guidance for Monitoring and Reporting on Progress in Achieving the Global Targets of the Sendai Framework for Disaster Risk Reduction

Collection of Technical Notes on Data and Methodology

December 2017

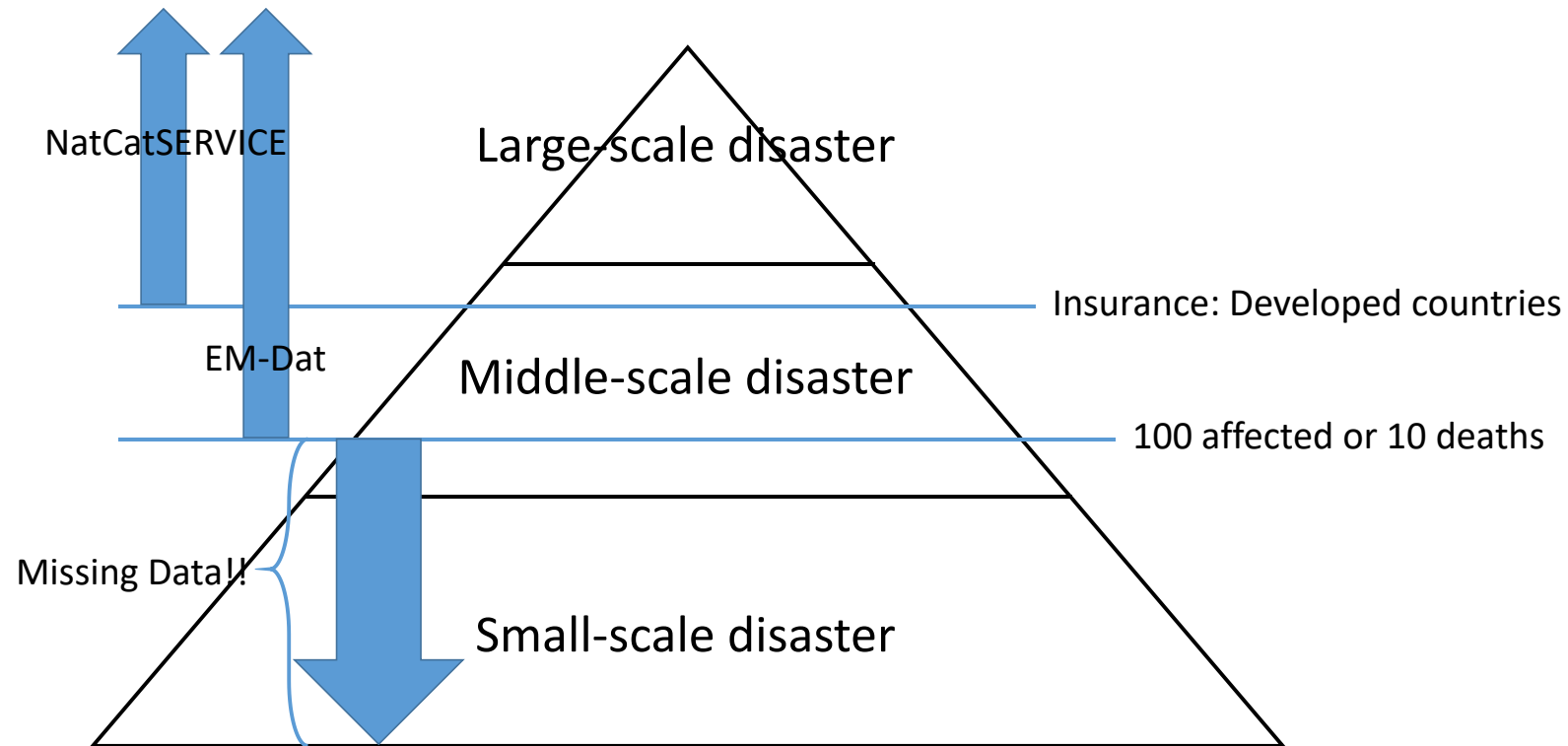


国連が作ったモニタリングのためのガイドライン

大きな災害の統計はあるが、より小さなものはカバーされにくい。保険でカバーされない途上国の被害統計は。。。

What are the lacking points of the existing database?

- Large-scale disaster are well reported while smaller scale ones are not

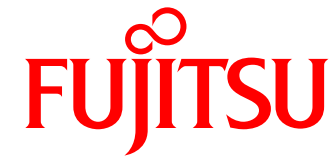


主な災害被害統計の比較

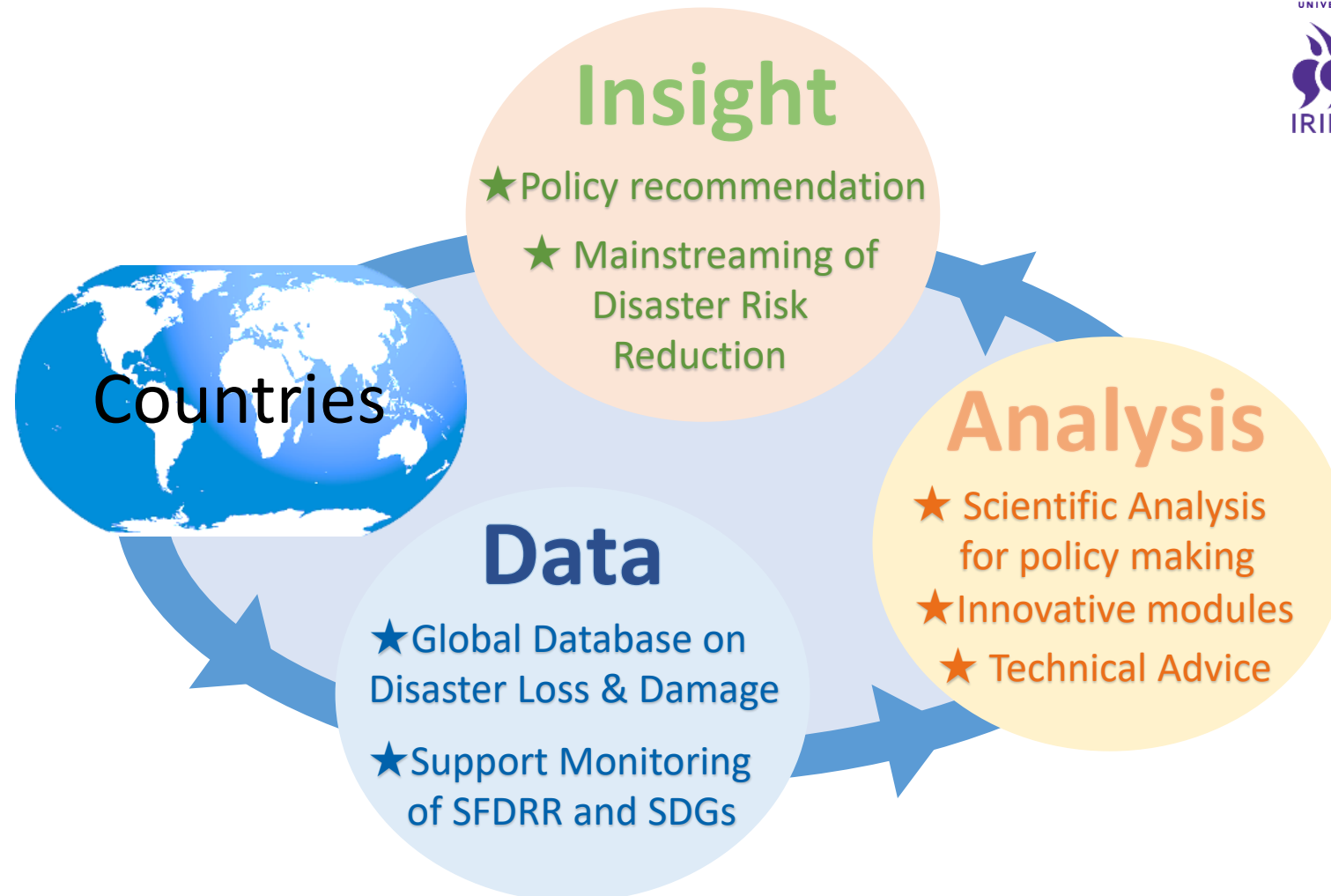
	DesInventar format	EM-DAT database	NatCatSERVICE	Sigma
Ownership	Mostly Governments Some by NGO, Research Institute etc.	CRED: Centre for Research on the Epidemiology of Disasters	Munich Reinsurance	Swiss Re Institute
Scope of the database	87 countries	230 countries listed but double-counting Soviet Union, Yugoslavia, Czechoslovakia, etc.	Not Identified ✕mainly developed countries	31 countries
	784,577 events	24,942 events	More than 28,000 events	Not Identified
	Depends on the country (Oldest record)	1990-Present	1980-Present	1970-Present
Disaster Collected	All Disasters	Disasters which meet a certain criteria	Disasters with Human or Economic loss	Natural catastrophes and Man-made disasters
Data Source	Authorized by the Government	Multiple Source (Un agencies, Countries, Red Cross, Red Crescent, World Bank, Reinsurance, Media)	Insurance Company based	News papers, direct insurance and reinsurance periodicals

	DesInventar	EM-DAT	NatCatSERVICE	Sigma
Threshold to record	All disasters (one or more human losses or one or more dollars of economic losses)	One of the following criteria must be fulfilled: (1) 10 or more human deaths (2) 100 or more people affected/injured/homeless (3) Declaration by the country of a state of emergency and/or an appeal for international assistance	Undisclosed	For the 2016 reporting year – insured losses: 19.9 million USD for maritime disasters, 39.8 million USD for aviation, 49.5 million USD For other losses or economic losses: 99 million USD or Casualties: 20 dead or missing, 50 injured, 2,000 homeless
Data quality control	Varies by country (governments, NGOs, or research institutes)	Database owner	Database owner	Database owner
Spatial resolution	The minimum level of geographic resolution	Country	Country	Country
Advantage	<ul style="list-style-type: none"> -Widely used tool -Human losses are disaggregated into deaths, injured, affected, homeless. -Data is to be stored by each country in a uniform format developed to record disaggregated data. -UNISDR encourages countries to use DesInventar in implementing the SFDRR. -Users can download the dataset itself. 	<ul style="list-style-type: none"> -Actively and constantly maintained -Human losses are disaggregated into deaths, injured, affected, homeless. -Data is to be stored in a uniform format. -The threshold to record is clear. -Users can download the dataset itself. 	<ul style="list-style-type: none"> -Reliable information on insured losses -Graphics can be obtained based on the statistical data by clicking. 	<ul style="list-style-type: none"> -Reliable information on insured losses -Graphics can be obtained based on the statistical data by clicking.

Global Centre for Disaster Statistics (GCDS)



*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

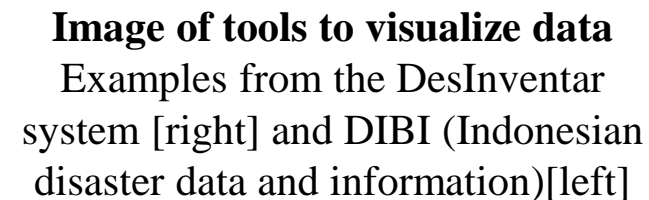
国連開発計画・東北大学災害科学国際研究所 災害統計グローバルセンターの設置発表



今村・災害研所長 里見・東北大前総長 クラーク・UNDP元総裁・ 奥山・仙台前市長

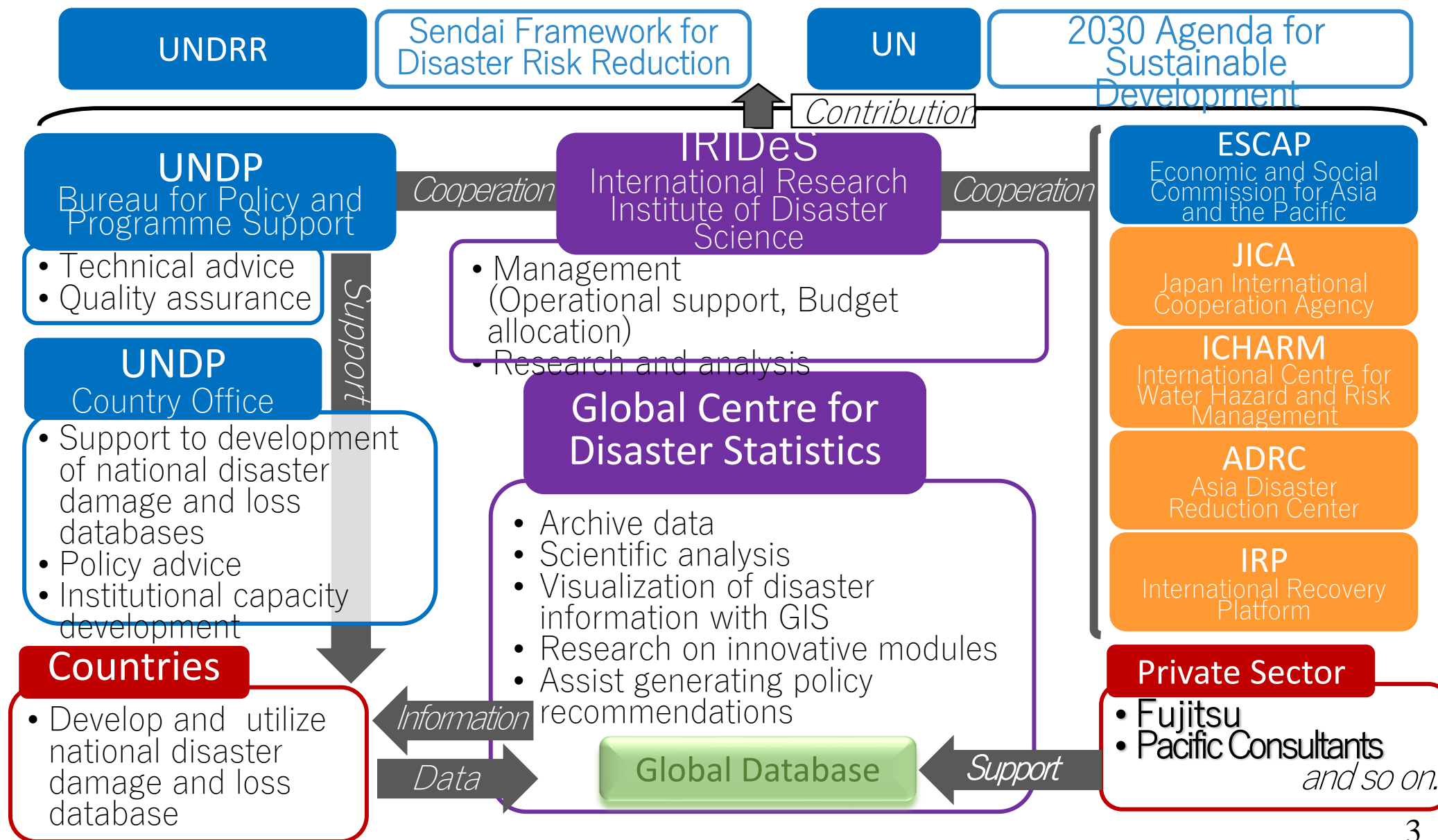
ショウヤー・UNDP元危機管理部長 アクタール・前ESCAP事務局長

- Support the United Nations Office for Disaster Risk Reduction (UNDRR) 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
- Provide policy advice to build capacities of national/local governments based on their demands



Detailed Scheme of the GCDS

仙台モニタリングへの貢献



- *White paper* on DRR has been issued by the Cabinet Office of Japan annually based on the Disaster Countermeasures Basic Law in 1961. This policy paper reviews national DRR policy taken in the previous year supported by evidence, including disaster damage and loss data supplied by various national agencies. It is circulated to all the parliamentarian members to generate improved policy (kaizen in DRR).
- Learning from this good practice, GCDS would propose National Disaster Management Organizations (NDMOs) to generate a similar review report. GCDS intends to provide basic analysis for the report based on the national damage and loss data. GCDS welcomes joint work in this area with academia in each interested country as well.

Analysis based on collected disaster loss data

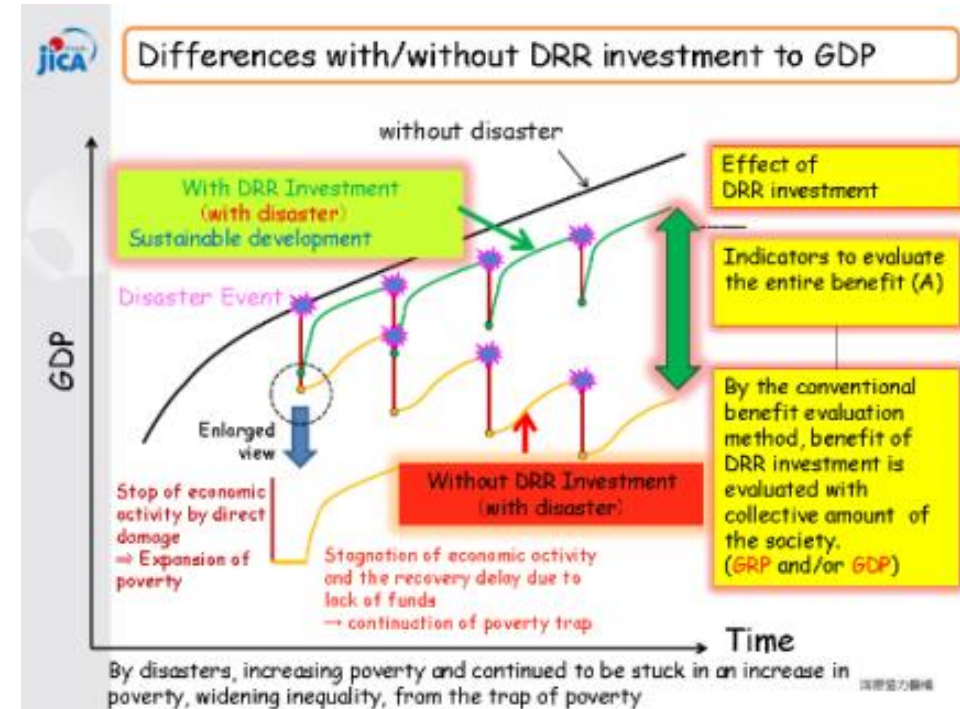
被害データを使っでの分析

■ 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

<Reference: Results of Ishiwata and Yokomatsu (2018)>

Results of Case Study in Pakistan

防災投資の最適解は

GDP

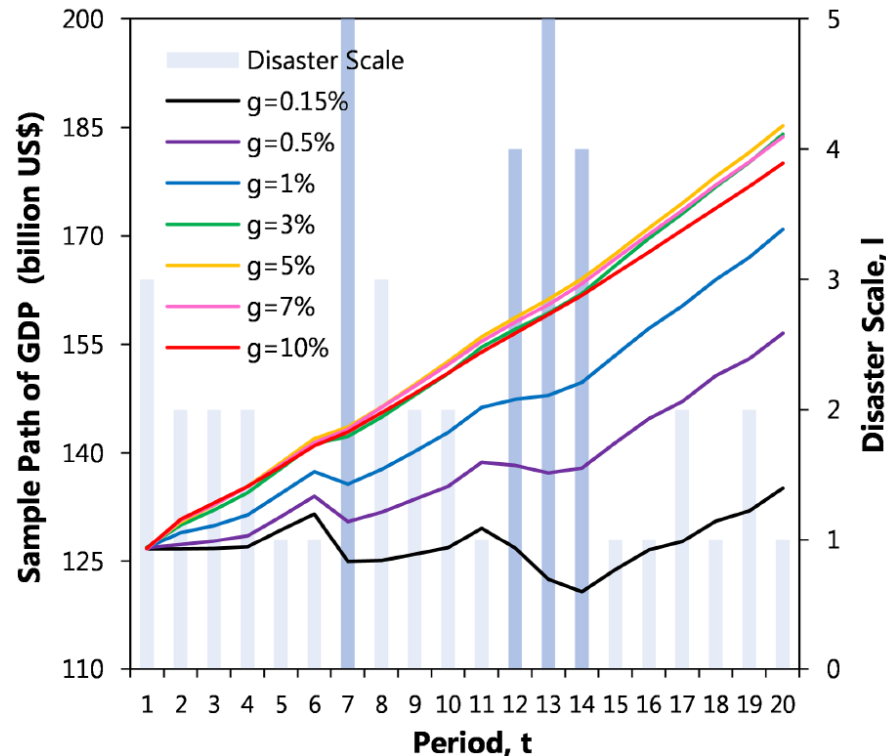


Fig. GDP Growth by DRR level (Sample Path)

Consumption

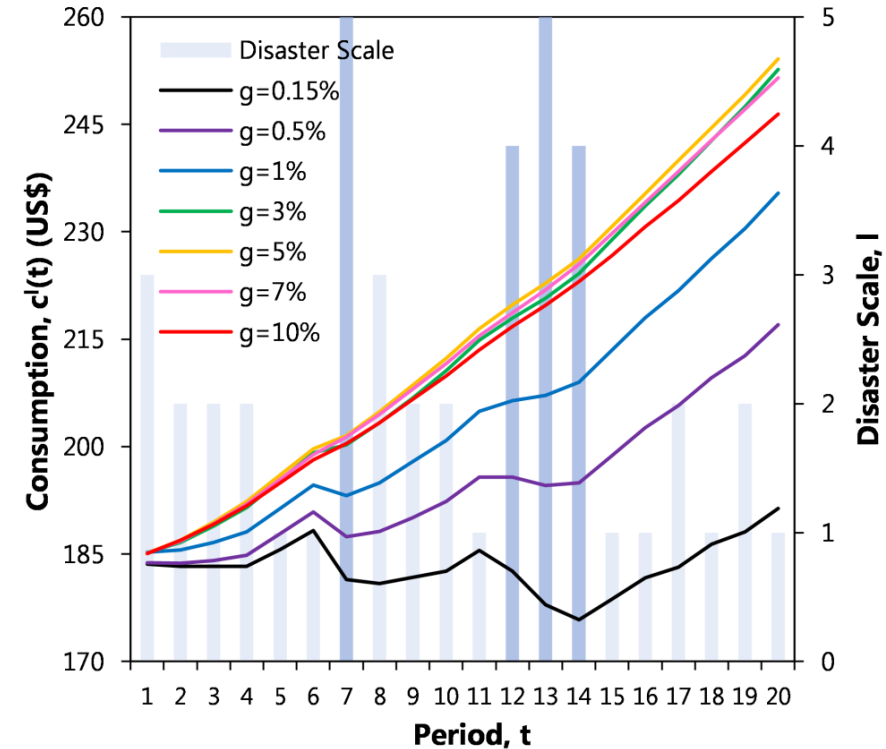


Fig. Consumption by DRR level (Sample Path)

※ Source : Ishiwata and Yokomatsu (accepted, 2018)

Optimal percentage of DRR investment is approximately 3~5% of GDP (4~9 billion USD / year)

How to **integrate** findings of science and technology **into** global policy making for resilience:

Tohoku University's Strategy

東北大の戦略

どんなタマを撃ち込んだか

何ができたか



The former Tohoku University President Susumu Satomi greeting with the former UN Secretary-General Ban Ki-Moon on the occasion of Tohoku University Symposium, titled “Our Message to the future ~ Lessons learned from the Great East Japan Earthquake ~ on 15 March 2015

INPUTS to the negotiation process of the **Sendai Framework for Disaster Risk Reduction (1)**

1. Assisted the City of Sendai for the competition of hosting **the third UN World Conference on Disaster Risk Reduction** by offering our campus for public events
2. Launched the “**Preparatory Office for the UNWCDRR**” in April 2014
3. Focused contents to be reflected in **the final document**:
 - 1. Setting common **goals and targets** in disaster risk reduction (DRR)
 - 2. **Evidence-based policy making** in DRR, including utilizing disaster loss and damage statistics
 - 3. **Lessons** learned from the Great East Japan Earthquake and Tsunami, including Build Back Better concept
4. **Developed a strategy** to appeal those by identifying national and international venues

撃ち込んだタマ

National venue: A few members of Tohoku University served as experts to the national committee preparing for the third UN Conference on DRR

International venues: Next slide

INPUTS to the negotiation process of the **Sendai Framework for Disaster Risk Reduction** (2)

- 1. Setting common **goals and targets** in disaster risk reduction (DRR) 数値目標を入れることを目指した
 - Upstream discussion: Tohoku University attended an **Expert Group Meeting** by UNISDR in Vienna, Austria on 10-11 February 2014, insisting the inclusion of numerical targets to the new framework
 - This action led to **the pre-zero draft of the new framework** to include ‘X% reduction of human and economic losses’
- 2. **Evidence-based policy making** in DRR, including utilizing disaster loss and damage statistics 国連の専門家会合を誘致
 - Tohoku University hosted **two expert group meetings** on disaster statistics with UNDP/UNESCAP
- 3. **Lessons** learned from the Great East Japan Earthquake and Tsunami, including Build Back Better concept
 - Tohoku University organized **numerous sessions** on this topic at major UN meetings, including
 - ✓ Global Platform for Disaster Risk Reduction in Geneva, May 2013 準備会合などへの参加
 - ✓ Asian Ministerial Conference on Disaster Risk Reduction in Bangkok, June 2014
 - ✓ UN ECOSOC meeting in New York, July 2014
 - ✓ Preparatory Meetings for the third UN World Conference on DRR in Geneva, July and November 2014

INPUTS during the third UN World Conference on DRR

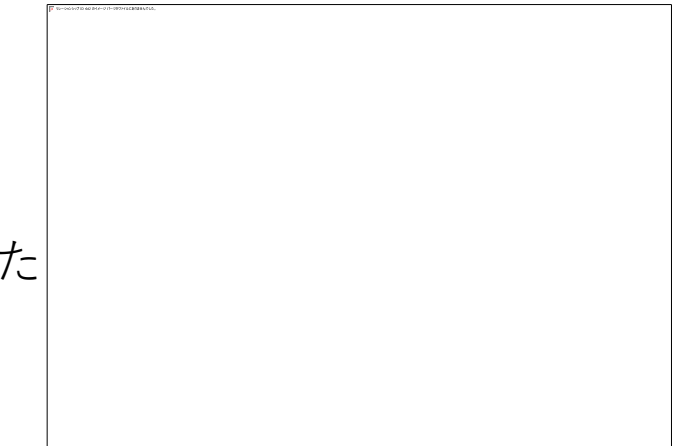
国連防災世界会議中の撃ち込み

- Organized 34 symposiums and seminars, 16 booth exhibitions, 8 poster exhibitions, and 4 study tours.
- In both cases, the University's program accounted for more than 10 percent of the total organized by domestic organizations, and approximately 4,500 people participated in the symposium and seminar, and approximately 4,000 people participated in the exhibition.
- 24 departments and bureaus within the university participated in these projects

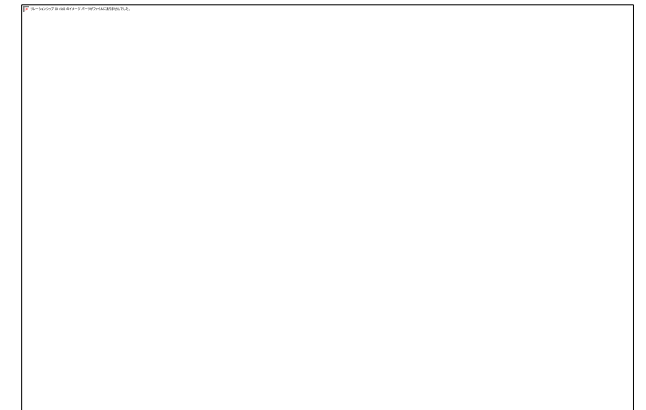


OUTPUTS 成果

- 1. Setting common goals and targets in disaster risk reduction (DRR)
 - ✓ Yes, SFDRR set seven global targets to reduce disaster loss and damage for the first time in history 7つのグローバルターゲットできた
- 2. Evidence-based policy making in DRR, including utilizing disaster loss and damage statistics UNDPと災害統計グローバルセンターを作った
 - ✓ Yes, Tohoku University and United Nations Development Programme (UNDP) agreed to launch the **Global Centre for Disaster Statistics** to help monitor progress on the global targets
- 3. Lessons learned from the Great East Japan Earthquake and Tsunami, including Build Back Better concept ビルドバックベターを盛り込む
 - ✓ Yes, the concept of **Build Back Better** stemming from the lessons learned from recovery in Tohoku was adopted in one of the **four priority areas of the SFDRR**
- 4. A new initiative
 - ✓ Proposed the World Bosai (Disaster Risk Reduction) Forum 仙台・東北のために残すものを：世界防災フォーラムを創造



GCDS launching ceremony on 16 March, 2015



1st World Bosai Forum in 2017

日本の災害被害統計の課題

詳細なデータを公開していない

内閣府防災担当は過去に努力するも総務省の壁は厚い

理由：

都道府県に大変な業務を強いるわけにはいかない。オープンデータ・ポリシーに反する。

ICTを使えばすぐに解決する。プライバシーの問題も解決は可能。

FACT:

後発の中国の災害被害統計システムに負けている。世界を見据えた防災白書のようなものも作成している。

中国は、2030年の第4回国連防災世界会議をホストするかもしれない。学術界ではその雰囲気を感じた。どう付き合うか。

Annual Report 2020

- By the end of 2020, 143 Member and Observer States were reporting through the Sendai Framework Monitoring system, augmented by a variety of online trainings. UNDRR compiled, analysed and submitted this dataset to UNDESA to inform a variety of UN processes and reports.
- Target (e) of the Sendai Framework. Through targeted support, normative guidance, advocacy, and partnership, 101 Member States reported having national disaster risk reduction strategies aligned with the Sendai Framework.
- UNDRR invested heavily in supporting, gathering and using disaster loss data in all regions and proposed solutions for reporting disaggregated data by hazard, location, sex, age, income and disability.
- By December 2020, there were 120 countries and territories using the UNDRR managed DesInventar disaster loss databases

ターゲット（e）は、2020年が締め切りであったが。。。

世界防災フォーラムの構想

世界経済フォーラムのGAC会議@アラブ首長国連邦ドバイ・アブダビで

2012－14年ごろに構想

世界水フォーラムもNGOが主体

国連では、日本のインプットは質はよくてもOne of many
地域バランス云々で出番は少ない。言葉の壁や地理も。

防災を世界に。産官学民連携で。東北の被災地の復興のためにも。

そして、国連防災世界会議を一発の打ち上げ花火にならないように。
何か残るモノを仙台に。しかし、復興のまっただ中でお金は出ない。

お金がなくてもできる何かを。。。。

Purpose

1	Create a venue to illuminate Japanese experiences on disaster risk reduction and recovery process of the Tohoku Region, and to spin knowledge from disaster and weave wisdom of disaster risk reduction into society
2	Focus on solution-oriented discussions on disaster risk reduction with concrete examples provided by multi-stakeholders
3	Welcome disaster risk reduction experts as well as non-experts to explore and develop business opportunities together

**Express thanks for assistance to Tohoku
from all over the world
after the Great East Japan Earthquake and Tsunami
on March 11, 2011**

世界防災フォーラム WBF 2017年

947 participants
from over 42 countries and regions

more than 10,000 domestic and international participants
joined World Bosai Forum,
Bosai Kokutai 2017 and 2017 Bosai Industry Fair



Associated events:

- Open Forum by Sendai City (in Japanese)
- Exhibitions of DRR technology

A vertical poster for the World BOSAI Forum. The background is a gradient of colors: purple at the top, transitioning through yellow, green, and blue to a dark blue at the bottom. The text is white. At the top, 'World BOSAI Forum' is written in a large, bold, sans-serif font. Below this, a thin white line separates the title from the tagline 'Spin disaster knowledge to Weave BOSAI wisdom'. Another thin white line follows. Then, '2nd Nov.9-12, 2019' is displayed in a large font, with 'IDRC 2019 in SENDAI JAPAN' in a smaller font below it. To the left of the date is a circular icon with '2nd' inside. Below the date, the venue is listed: 'Sendai International Center / Kawauchi Hagi Hall, Tohoku University'. A paragraph of text explains the meaning of 'BOSAI'. At the bottom, the website 'www.worldbosaiforum.com' is shown next to a QR code. The very bottom of the poster has the text 'World Bosai Forum Secretariat' in a small font.

World
BOSAI
Forum

Spin disaster knowledge to
Weave BOSAI wisdom

2nd Nov.9-12, 2019
IDRC 2019 in SENDAI JAPAN

Venue | Sendai International Center/
Kawauchi Hagi Hall, Tohoku University

BOSAI is a traditional Japanese term, indicating a holistic approach to reduce human and economic losses from disasters, which represents activities in all disaster phases, including prevention, recovery, response and mitigation.

www.worldbosaiforum.com

World Bosai Forum Secretariat

1,000 registered participants

10,000 participants including citizens

50+ 90-minute oral sessions

100 posters

30 Flash-talk presentations

30 exhibition booths

Study tours and excursions to tsunami affected areas

An excursion goes to Fukushima Nuclear Power Plant sites

A cultural event (cultural performance from the tsunami-affected areas)

2019 WBF: 60+ oral sessions

Examples:

- How to achieve the Sendai Target E
- How to adapt to climate change
- How to deal with stronger typhoons
- Bosai and traditional and new media
- DRR investment
- Build back better
- Lessons learned from Tohoku – bosai and recovery
- How not to forget about lessons learned from disasters
- What's up in Fukushima?
- Disaster damage and loss database
- Cutting-edge bosai science
- Bosai dialogue with 3 rectors from major universities in Tohoku
- and more

Around 50+ Meeting Sessions

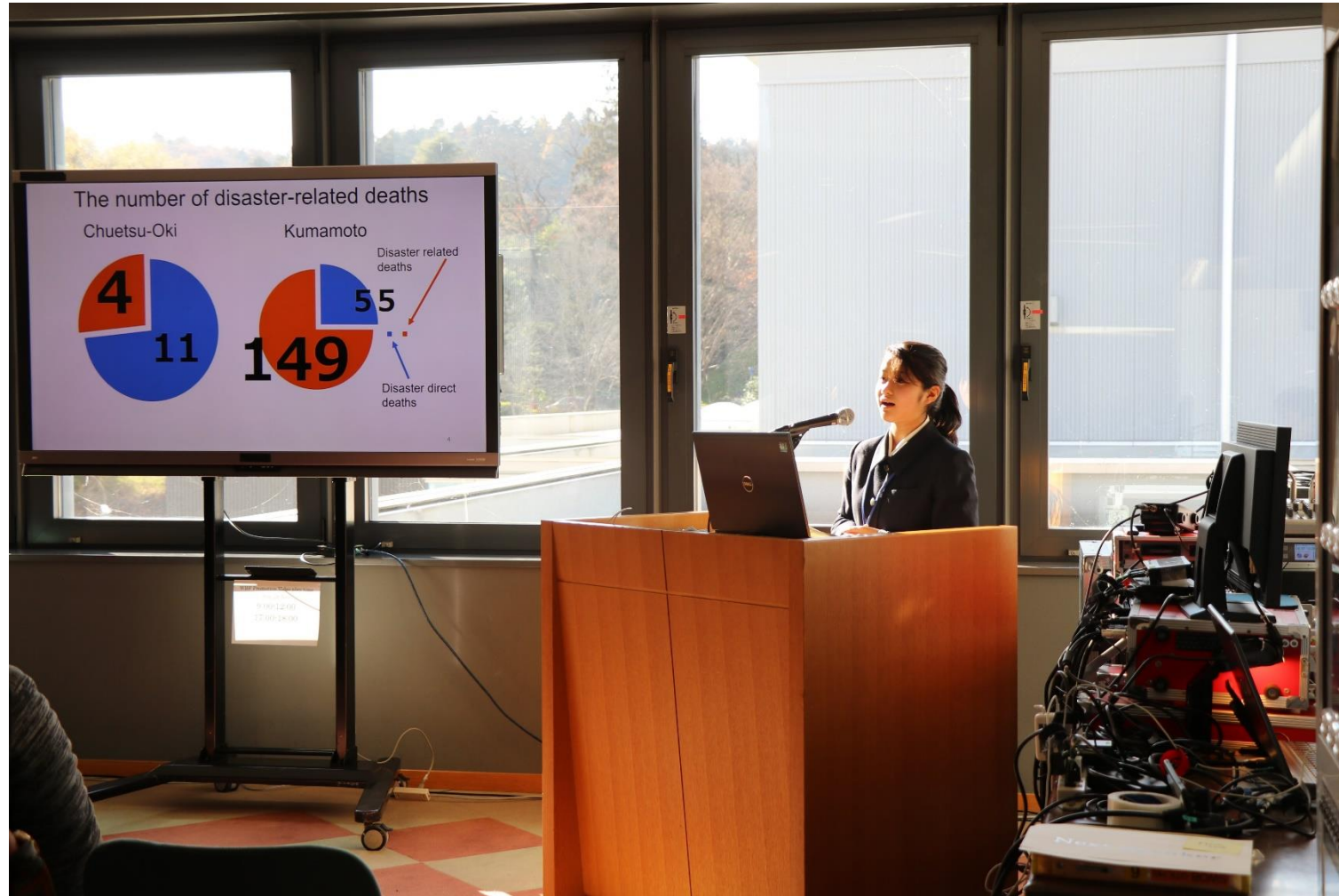


**Session “Sustainable Development through DRR Investment”
Organizer: Japan International Cooperation Agency (JICA)**

Poster Presentations:



Flash Talk Presentations:



Exhibitions:



Closing Session

Outcome document: Chair's Summary

Chair's Summary¹

World Bosai Forum, held in Sendai Japan, 25-28 November, 2017

Fumihiko Imamura
World Bosai Forum Committee Chairperson

The concept for the World Bosai Forum emerged at the United Nations World Conference on Disaster Risk Reduction, held in Sendai in March 2015. The aim was for an open and broad forum for civil society, the private sector, academia, media, government and international organisations, to share knowledge and learn from one another, to help advance the goals of the Sendai Framework for Disaster Risk Reduction, which is the international agenda for action agreed at the World Conference, and last but not least, to capitalize on the experience so painfully gained as a result of the 2011 Great East Japan Earthquake and its massive tsunami over 6 years ago. The Japanese word “bosai” means the holistic approach to reducing losses and damage, encompassing all aspects of disaster management, from prevention to recovery. To strengthen international linkages, the Forum has partnered with the long-established International Disaster and Risk Conference Davos. It has also benefited from its co-location with Japan's national events on promoting disaster risk reduction, the Bosai Kokutai conference and the Bosai Industry Fair in 2017 which together were attended by 10,000 participants.

I am happy to report today that this first World Bosai Forum has amply succeeded in its aims. It has attracted over 900 participants including people from over 40 countries or regions. There were 50 specialized sessions spanning diverse aspects of disaster risk, so many in fact that numerous parallel sessions were required. In addition to these sessions, there was a one-day pre-forum festival, 12 technical exhibitions, dozens of poster presentations, 26 short “flash talks,” and study tours and excursions to nearby tsunami-affected areas.

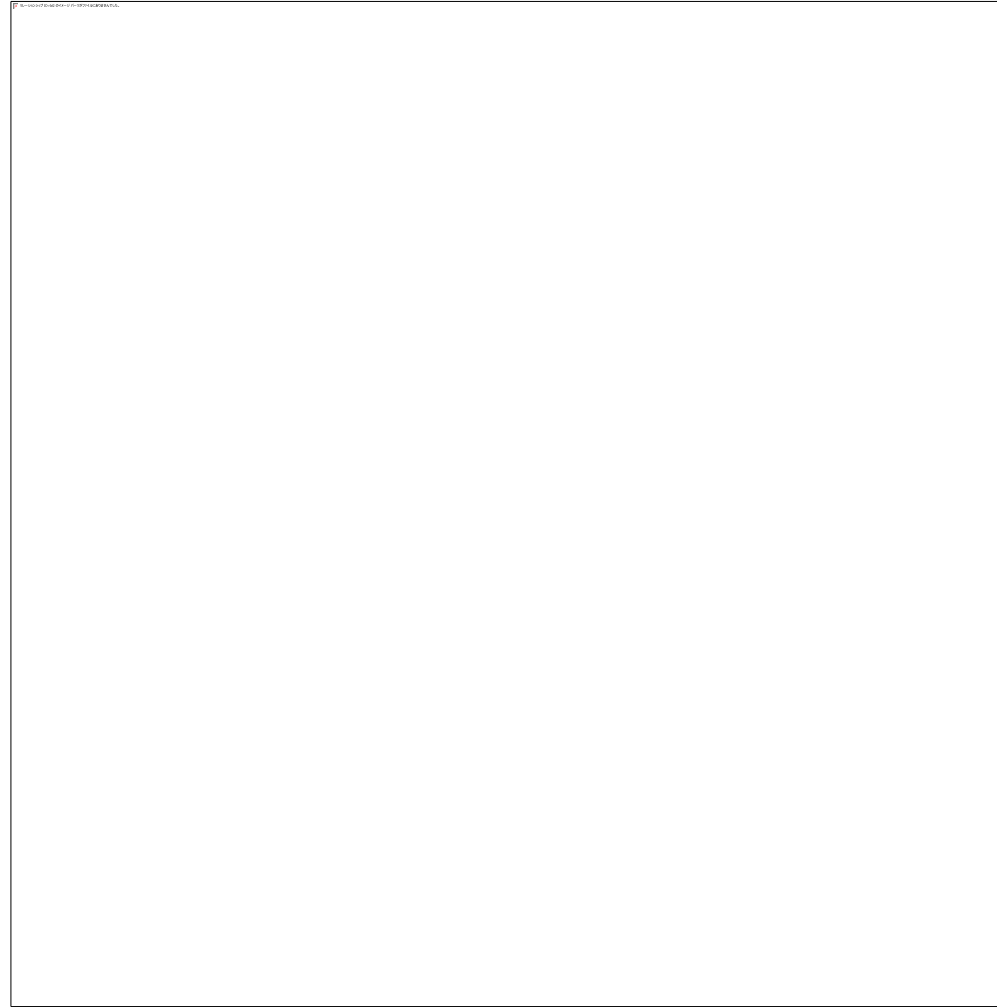
From highly motivated school children, leading experts and captains of industry and government we have heard how different factors must be linked and blended to properly protect our societies – including science, technology, culture, finance, education, leadership, and community action. And we have heard time and again the many positive messages of recovery, reconstruction and renewal, and the recognition that we can accept and manage Nature's wrath along with her bounties.

I was greatly impressed by the Pre-Forum Festival event on Saturday 25 November which was attended by almost 700 people. It sought to show the human ways we respond to, and interpret and learn from, disaster events and disaster risk, through personal initiatives and learning, courageous leadership, and cultural production by way of music and dance. The projects and insights of the students were illuminating and encouraging, and demonstrated that disaster policies should never forget the potential of young people to engage in and help advance the safety of our communities – as one

¹ The summary was drafted by Forum Rapporteur Dr Reid Basher, New Zealand-based Visiting Professor, International Research Institute of Disaster Science, Tohoku University, drawing on session reports prepared by session organisers and with the assistance of the Institute's Dr Yuichi Ono and Dr Daisuke Sasaki.

3rd World Bosai Forum in 2021 was postponed to 2022 due to the COVID-19

Instead, World Bosai Walk Tohoku +10 2022年2月23日にいわきをスタート



10年の節目に被災地を福島・いわきから青森・八戸まで1000キロを歩いて、BBBを探す旅：世界発信

3. 防災における非政府・民間セクターの役割・重要性

政府の限界

例) 気候変動の交渉の行き詰まりをどう解決していくか

数年前の世界経済フォーラムの前振りの議論でのソリューション

世界の宗教リーダーにうったえる + 世界企業のリーダーにうったえる

COP26・グラスゴー 国での解決は限界。企業や自治体にボランティアでの自発的取り組みのグループを作って。。。

4. BOSAI-TECHに取り組む企業・自治体等に期待すること

東北大は世界にむけて取り組みを発表する舞台を作った

世界防災フォーラムで世界にむけて被災地から発信に挑戦してほしい

世界防災フォーラムは基盤が脆弱・産官学民で支援してほしい

2030年に向けて戦略を練り始めた

東北大学災害科学国際研究所

防災実践推進部門

2030国際防災アジェンダ推進オフィス

東北大・卓越大学院

防災関連企業との連携
教育と研究

国際機関人事養成コースを模索中