

**World Bosai Forum/IDRC 2017 in Sendai  
Report**



DAVOS ◆ SENDAI

**WORLD  
BOSAI  
FORUM**

**IDRC 2017 in SENDAI**

**International Disaster and Risk Conference 2017, Sendai, JAPAN**

Reported by  
The Organizing Committee for the World Bosai Forum/IDRC 2017  
in Sendai

# World Bosai Forum/IDRC 2017 in Sendai

## Report

### 1. About the Forum

- Dates: Saturday 25<sup>th</sup> – Tuesday 28<sup>th</sup> November, 2017
- Venue: Conference Building, Sendai International Center/ Kawauchi Hagi Hall, Tohoku University
- Program:

25<sup>th</sup>: Pre-WBF Festival (Opened to the public)

26<sup>th</sup>: Opening Sessions

(World Bosai Forum/Bosai Kokutai Joint Opening and WBF Opening)

Meeting Sessions (Opened to the public)

Poster presentations, flash talk presentations, exhibitions, study tours and reception

27<sup>th</sup>: Meeting sessions (some were opened to public), poster presentations,

flash talk presentations, exhibitions and study tours

28<sup>th</sup> (a.m.): Meeting sessions (some were opened to public)

(p.m.): WBF Closing / study tours, excursions (overnight trips returning on the 29th)

### 2. Outcomes Overview

As a pre-event to the World Bosai Forum, the Pre-WBF festival was held at Kawauchi Hagi Hall, Tohoku University on the afternoon of Saturday 25<sup>th</sup>. About 700 people including local citizens participated in the event. Looking back at the 6-year path from the Great East Japan Earthquake, the younger generation living in disaster-affected areas gave presentations on their activities for disaster risk reduction. Participants from various generations enthusiastically discussed how society should be improved through disaster risk reduction. In addition, we held a Tiger Dance of Namiita, a folk art performance, by the people from Kesenuma, Miyagi, which was damaged by the March 11<sup>th</sup> 2011 disaster. To wish for recovery of the disaster areas, concerts were also held. The festival became an opportunity for domestic and overseas experts in the field of disaster risk reduction and ordinary citizens to be able to reach out to the hearts of the victims in disaster-stricken areas.

The World Bosai Forum was held at the Sendai International Center and Kawauchi Hagi Hall, Tohoku University, bringing together 947 participants from over 42 countries. This was nearly double the number of participants that we had initially expected. Proactive and meaningful discussions were held by a wide range of officials and experts from domestic and overseas industries, governments, academia and private sectors as well as local citizens. We had a partnership with ACUDR and USMCA<sup>1</sup>, from which we had a total of 126

---

<sup>1</sup> ACUDR: Asian Conference on Urban Disaster Reduction USMCA: International Symposium on New Technologies for Urban Safety of Mega Cities in Asia

participants. We successfully created a platform for building international cooperation to share and resolve the current situation and to handle various challenges for Bosai or disaster risk reduction. Practical and effective discussions have contributed to raising and promoting awareness of Bosai and the Sendai Framework 2015-2030 to the world from Sendai. Our first World Bosai Forum was concluded with productive outcomes and will lead to its future meetings to be held every 2 years.

On Sunday 26<sup>th</sup> and Monday 27<sup>th</sup>, Bosai Kokutai 2017 and 2017 Bosai Industry Fair were held at the same venue. Including these events, we had more than 10,000 domestic and international participants. Holding the Forum jointly with these two events enabled us to introduce and further promote Bosai activities taken at a regional and community level and Bosai-related industries.

At the closing session of the Forum on Tuesday 28<sup>th</sup>, we had a presentation of the Chair's Summary which consisted of the contents of discussions and meetings during the 4-day event and the Forum's outlook for the future. The summary outlines highlights under 3 headings: science and technology; policy and finance; and society and culture. In addition, the summary mentions future prospects for the pillars of the Sendai Framework 2015-2030 including the importance of cultivating the "build back better" principle such as the creation of new industries, and developing "culture of risk recognition."

Study tours and excursions organized by Sendai City provided many foreign participants with an opportunity to deepen their understanding of people's experiences, lessons learned from the Great East Japan Earthquake and the status of rebuilding from the disaster.

### **3. Participants**

The Forum was attended by 947 people from the following 42 countries and regions.

Japan, Iran, Philippines, Taiwan, United States of America, Indonesia, Thailand, Republic of Korea, Myanmar, Germany, United Kingdom, China, India, Sri Lanka, Saudi Arabia, Malaysia, Mexico, Nepal, Australia, Cambodia, Maldives, Switzerland, Bangladesh, Pakistan, Israel, Chile, Italy, Netherlands, Turkey, United Arab Emirates, Viet Nam, Austria, Brazil, Canada, Costa Rica, Denmark, El Salvador, Luxembourg, Mongolia, Zimbabwe, Hungary and Peru. (Listed in the order of countries/regions from which the largest number of participants came.)

### **4. Summary of each program**

Pre-WBF Festival: "Learning from the disaster, bridging to the future" held in partnership with the Science Agora.

Looking back at the path from the Great East Japan Earthquake, people from the younger generation in Iwate, Miyagi and Fukushima prefectures gave presentations on their Bosai activities in the first part of the festival. The presentations were followed by a panel discussion including experience and knowledge gained from the Kobe Earthquake in 1995 and views from Kuroshio Town, Kochi Prefecture, which is preparing for the anticipated Nankai Trough Earthquake. In the second part of the festival, we had a Tiger Dance of Namiita, a folk art performance in Kesenuma, Miyagi Prefecture, one of the disaster-affected areas, to express our gratitude for the support we received from within and outside of Japan at the time of the Great East Japan Earthquake. The subsequent "Wish for Recovery" Concert consisted of performances by the

Sendai Philharmonic Orchestra members and NHK Childrens' Choir. Involving the audience, we sang together "Hana wa Saku" (Flowers Will Bloom) to conclude this festival. Recognizing the importance of cultural aspects of Bosai, the Pre-WBF festival aimed to pass down the disaster experiences to the future and to the world. The festival made a deep impression on the audience.

### Opening Sessions

The WBF - Bosai Kokutai joint opening session raised expectations for creating new value through making the best out of the opportunity for collaborating. In the subsequent Forum opening session, speeches were made by high school and university students who are living despite the hardship toward the future after having lost their loved family members. Touching on their experiences, they talked about their determination for the future. Dr. Robert Glasser, the Special Representative of the UN Secretary-General for Disaster Risk Reduction, gave remarks of acknowledgement for Japan's commitment and leadership in disaster risk reduction, and expectations for the Forum to be one of the key global platform conferences in this field.

### Meeting sessions

We held 49 meeting sessions including 16 free open sessions and 33 general sessions (Appendix 1). Bosai was proactively discussed among participants from a broad range of perspectives. Some of the session outlines are briefly described below as examples.

1. Session "The Knowledge Front of Disaster Risk Reduction"

Organizer: Elsevier

Date of session: 26<sup>th</sup> November

Introducing major findings from "A Global Outlook on Disaster Science," their global report released at the Forum, international experts held discussions on the priorities of science in the transition from the Hyogo Framework to the Sendai Framework for disaster risk reduction.

2. Session "Sustainable Development through DRR Investment"

Organizer: Japan International Cooperation Agency (JICA)

Date of session: 27<sup>th</sup> November

The importance of investment in disaster risk reduction was addressed in this session. The main focus was how we can carry out investment in DRR in developing countries. It was indicated that it is important for the central government and municipalities to exercise their leadership and have consensus building among citizens.

3. Session "Vision and Future of the Global Alliance of Disaster Research Institutes"

Organizer: Global Alliance of Disaster Research Institutes (GADRI)

Date of session: 27<sup>th</sup> November

Global Alliance of Disaster Research Institutes (GADRI) was established after the UN World Conference on Disaster Risk Reduction held in March 2015. Members leading the GADRI's activities, and representatives

from its partner networks, introduced their visions and activities. Involving the audience, they held proactive discussions on future prospects for their activities.

4. Session “Strengthening contributions to the International Community through Multi-disciplinary Disaster Science Research”

Organizers: Association of Pacific Rim Universities (APRU) and Tohoku University

Date of session: 27<sup>th</sup> November

Tohoku University was selected as one of the three Designated National Universities in Japan, and Disaster Science is one of the four pillars of the research excellence in Tohoku University. This session was positioned as a kick-off symposium of the Designated National University. After the logo of the Disaster Science platform was introduced, Prof. David Alexander from University College of London, Prof. Fatma Lestari from the University of Indonesia, Prof. Hiroki Takakura from the Center for Northeast Asian Studies, Tohoku University and Dr. Gwendolyn Pang from the International Federation of Red Cross and Red Crescent Societies (IFRC) were invited as panelists and held discussions. The session raised expectations for establishing collaborative partnerships among diverse stakeholders and building a disaster-resilient society.

Poster presentations

A total of 93 posters were presented. The topics varied from research findings related to disaster risk reduction to practical efforts for disaster risk reduction in industries and others. During the core time, presenters held active discussions with attendees in the poster area located on the foyer on the 3<sup>rd</sup> floor. The Poster Awards, sponsored by Fuji Technology Press LTD, were granted to the following posters.

[Best Poster Award]

Choon Yong Heng

“Doomsday Rehearsal: Architecture for Pre-Disaster Education and 2020 Tokyo Olympics The Year of Disaster Prevention Global Classroom”

[Poster Award]

Erick Mas and Daniel Felsenstein

“Dynamic Integrated Model for Disaster Management and Socio-Economic Analysis (DIM2SEA) - A Japan-Israel Project”

Giriraj Amarnath, Shuhei Yoshimoto; Vladimir Smakhtin and Pramod Aggarwal

“Mapping Multiple Climate-related Hazards in South Asia”

Kwanchai Pakoksung, Anawat Suppasri, Panon Latcharote, Abdul Muhari, Fumihiko Imamura, Ke Lin, Priza Kayestha, Koji Yamamoto and Shigeko Tabuchi

“Global tsunami risk assessment: Industry-academic collaboration under Willis Research Network (WRN)”

Andreas Nikolaus Küppers, Martin Hammitzsch & the ARISTOTLE Project Team  
“ARISTOTLE & The EU Civil Protection Mechanism”

Giriraj Amarnath, Karthikeyan Matheswaran, Niranga Alahacoon, Ravinder Malik, Pramod Aggarwal  
and Alok Sikka

“Investing in Disaster Resilience: Risk Transfer through Flood Insurance in South Asia”

### Flash talk presentations

A total of 27 presentations were given by researchers, high school and university students, companies and citizens. They each discussed various disaster-related topics in 12 minutes. The area used for the flash talk presentations was close to a free open space, which prompted Forum participants to stop by and hear the presentations. The presentations were video-recorded and are scheduled to be posted online.

### Exhibitions

The following 12 organizations/groups presented their activities at their exhibition booths.

- General Incorporated Association, Japan Vending Machine Practical Social Contribution Association
- Journal of Disaster Research
- The Iwate Nippo Co., Ltd.
- Weathernews Inc.
- Elsevier
- Japan International Cooperation Agency (JICA)
- International Research Institute of Disaster Science, Tohoku University
- Student Exchange Division, Tohoku University
- City of Sendai
- Global Alliance of Disaster Research Institutes (GADRI)
- USMCA/ISDM
- ACUDR/ISSS

### World Bosai Survey

This survey was conducted in order to illuminate the awareness levels and opinions of the experts and citizens on disaster risk reduction by asking questions related to the Sendai Framework. The findings will be shared so that they can be utilized in making policies for disaster prevention around the world. To our knowledge, such a worldwide survey on awareness of disaster risk reduction has never been carried out before. Before and during the Forum, the survey questionnaire was posted on the Forum website, and about 200 participants answered the questionnaire. The results were briefly presented at the closing session of the Forum. We plan to further analyze the collected data and present the results as a final report.

## Closing session

The Chair's Summary was presented, looking back at the outcomes from the Forum, summarizing efforts, suggestions and discussions by various stakeholders from industry, government, academia and citizens (Appendix 2). Mr. Tatsuo Hirano, a member of the House of Councilors in Japan and former Minister for Reconstruction, gave his remarks, hoping for reconstruction in Tohoku. Mr. Kimio Takeya, a distinguished technical advisor to the President of JICA, the Japan International Cooperation Agency and Visiting Professor, Tohoku University, addressed the importance of "Build Back Better" concept with applied examples, and the efforts of the Japanese team to implement the concept into the Sendai Framework. Mr. Yukimoto Ito, Vice Mayor of the City of Sendai, made his closing remarks. Mr. Walter Ammann (GRF Davos) then came onto the stage for passing the baton to the International Disaster and Risk Conferences IDRC Davos, to be held in 2018. The Forum was concluded with a closing declaration by Mr. Nobuyoshi Hara, Executive Vice President for Earthquake Disaster Reconstruction, Tohoku University.

## Study tours and excursions

Sendai City organized study tours and excursions for the Forum participants in partnership with Aomori, Iwate, Miyagi and Fukushima Prefectures. The tours provided the participants with an opportunity to learn about the progress in rebuilding from the disaster and people's efforts for disaster risk reduction in Sendai City and surrounding areas. Through excursions, the participants not only learned the current status of reconstruction but also experienced the diverse charm of the Tohoku region such as its nature, history and food. The study tours and excursions were attended by 171 people from 30 countries and regions.

### **[Summary of study tours]**

Dates	Courses	Main destinations	The number of participants
26th	S1	Sendai Arahama Elementary School ~ Sendai 3/11 Memorial Community Center	18
27th	S2	Sendai Arahama Elementary School ~ Sendai Tobu Road tsunami evacuation stairs	13
	S3	Minami-Gamo wastewater treatment plant ~ Tsunami evacuation tower ~ KIRIN Beer Sendai Brewery	23
	S4	Millennium Hope Hills in Iwanuma city ~ Yuriage, Natori city ~ Sendai Arahama Elementary School ~ Moroya Farm Kitchen	14
28th	S5	Kaigan Park Arahama area ~ Sendai Arahama Elementary School ~ Sendai 3/11 Memorial Community Center	34
	Countries and regions of the participants* Philippines (16), Iran (13), USA (9), China (7), Thailand (6), Taiwan (5), Cambodia (4), Germany (4), Indonesia (4).		102 participants from 28 countries and regions

\*The numbers in the brackets show the number of participants from each country.

## [Summary of excursions]

Dates	Courses	Main destinations	The number of participants
28th ~ 29th	Course A Iwate Prefecture Course	Tono City Archives Museum of Logistical Support, Stay at Houraikan (Japanese style inn), Sanriku railway “Disaster Education Train,” Miracle Pine at Rikuzen-Takata, World Heritage Hiraizumi Chuson-Ji Temple	18
	Course B Miyagi Prefecture Course	Minamisanriku-cho Disaster Prevention Agency office site, Miyamisanriku-cho town hall (Talk by Mr. Sato, the Mayor of the town), Stay at Minami Sanriku Hotel Kanyo, Learn about the progress in reconstruction of Ishinomaki City, Matsushima (Godaigo and Zuiganji temples)	22
	Course C Fukushima Prefecture Course	Joban expressway, Naraha Remote Technology Development Center, Stay at Spa Resort Hawaiians, Learn about the progress in reconstruction of Iwaki City, Aquamarine Fukushima (Aquarium)	14
	Course D Aomori Prefecture Course	Hachinohe Hakatabune (Japanese style boat), Hachinohe Yatai Mura, Miroku Yokocho (Food stall village), Morning market at Mutsu-Minato station, Kabushima, Tanesashi coast	15
	Countries and regions of the participants* Iran (14), Thailand (8), Indonesia (7), China (6), Germany (5), Australia (3), France (3), Mexico (3), Taiwan (3), Turkey (3), United Kingdom (3).		69 participants from 19 countries and regions

\*The numbers in the brackets show the number of participants from each country.

## 5. Media

44 media outlets covered the Forum during the Forum period. 124 articles and reports (including 79 articles in newspapers, 33 articles on websites, 10 reports on TV, 2 reports on radio) were published or aired from the 25<sup>th</sup> November to the 25<sup>th</sup> December.

## 6. Partnership

We received support from the following 22 organizations.

Director General for Disaster Management, Cabinet Office, Government of Japan / Ministry of Education, Culture, Sports, Science and Technology - Japan / Ministry of Foreign Affairs of Japan / Ministry of Land, Infrastructure, Transport and Tourism / Reconstruction Agency / Miyagi Prefectural Government / Aomori Prefectural Government / Iwate Prefectural Government / Fukushima Prefectural Government / Global Alliance of Disaster Research Institutes (GADRI) / Association of Pacific Rim Universities (APRU) / NHK Sendai Station (Japan Broadcasting Corporation Sendai Station) / Sendai Television Incorporated / Tohoku Broadcasting Co., Ltd. / Miyagi Television Broadcasting Company, Ltd. / Higashinippon Broadcasting Co, Ltd. / Sendai FM Broadcasting Inc. / The Asahi Elementary Newspaper / The Asahi Student Newspaper / The Asahi Shimbun Sendai General Bureau / The Mainichi Shimbun Sendai Bureau / The Yomiuri Shimbun Tohoku Bureau / The Sankei Shimbun Tohoku General Bureau

## 7. Sponsorship

We received generous sponsorship from the following 34 groups and companies.

Development Bank of Japan Inc./Pacific Consultants Co., LTD./FUJITSU LIMITED/ELSEVIER/  
KAHOKU SHIMPO PUBLISHING CO./Tokio Marine & Nichido Fire Insurance Co., Ltd./  
Tohoku Electric Power Co., Inc./Japan Airlines Co., Ltd./East Japan Railway Company/  
Weathernews Inc./NEC Solution Innovators, Ltd./Kokusai Kogyo Co., Ltd./NSS/NEC Corporation/  
Japan Bosai Platform/HASHIMOTOTEN, CO. LTD./East Nippon Expressway Company Limited/  
The 77 Bank Ltd./IWATE NIPPO CO., LTD./Exhibition Technologies, Inc./A2 Corp./  
NTT DOCOMO, INC./Sendai General Construction Association/Sendai Television Incorporated/  
TTK Co., Ltd./Japan Society of Civil Engineers/Japan Environment Research Co., LTD./  
General Incorporated Association, Japan Vending Machine Practical Social Contribution Association/  
Nexco-Engineering Tohoku Company/Nexco-Maintenance Tohoku Company/  
HIGASHINIPPON BROADCASTING CO., LTD./Fuji Technology Press Ltd./  
Miyagi Dismantling Contractors Cooperative/Miyagi Consumers Co-operative Society

## 8. Public Relations

Utilizing their broad networks, each World Bosai Forum Committee organization actively promoted the Forum, which played an important role in bringing together many participants and drawing attention from many media outlets. Their promotion activities included distributing Forum posters and flyers and visiting their partner companies and institutions. In addition, the following activities were taken.

The International Research Institute of Disaster Science (IRIDeS), Tohoku University, was involved in conducting international public relations activities, distributing press releases about the Forum abroad through Kyodo News PR Wire and the Foreign Correspondents' Club of Japan (FCCJ). They also disseminated information about the Forum to relevant academic associations and 45 member universities through the Association of Pacific Rim Universities, of which Tohoku University is also a member. Sendai City posted the Forum signage at the city hall and Sendai Airport, put up the Forum flags in arcaded streets, advertised the Forum through ads in subways and made brochures intended for citizens about the three events: the Forum; Bosai Kokutai 2017; and 2017 BOSAI Industry Fair. Miyagi prefecture promoted the Forum to the division of disaster risk reduction and education committees in the local municipalities, and to individuals such as community leaders of disaster preparedness through training programs and other events. KAHOKU SHIMPO PUBLISHING Co. published featured news on the Forum and our sponsors' logos on their newspapers. Tohoku Economic Federation published articles in its monthly issue and proactively called its member companies, the government, experts and parliament members for participation in the Forum. Sendai Chamber of Commerce and Industry promoted the Forum in its regular meetings. Global Risk Forum GRF Davos, who was in charge of collecting and reviewing the poster presentations, called for participation to the Forum using its world-wide networks, which contributed to increasing international participants.

## 9. Schedules

The International Disaster and Risk Conference (IDRC) Davos 2018

Dates: Sunday 26<sup>th</sup> – Thursday 30, 2018

Venue: Davos, Switzerland

World Bosai Forum/IDRC 2019 in Sendai (to be held every 2 years)

Dates: Autumn 2019

Venue: Sendai, Japan

Detailed information about the report on our 1<sup>st</sup> World Bosai Forum is scheduled to be released on the official Forum website at <http://www.worldbosaiforum.com/english/>

## 10. Photos from the Forum



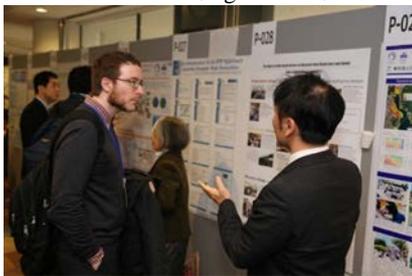
Pre-WBF Festival (Tiger Dance)



WBF-Bosai Kokutai Joint Opening



Session



Poster presentations



Flash talk presentations



Exhibitions



A Designated National University  
Kick-off Symposium



Study tours  
(S5 Arahama Elementary School)



Closing session

## **11. Message from the Secretariat for the World Bosai Forum**

We would like to express our heartfelt gratitude for all your kind and generous support that we received before and during the Forum. Thanks to all your help, our 1<sup>st</sup> World Bosai Forum went successfully. We would like to ask for your continued support towards the next World Bosai Forum, to be held in Sendai in 2019.

The Secretariat for the World Bosai Forum / IDRC 2017 in Sendai

Fumihiko Imamura

Chairperson, the World Bosai Forum Committee

Director, International Research Institute of Disaster Science

Yuichi Ono

Secretary-General, the Secretariat for the World Bosai Forum

Professor, International and Domestic Liaison Office, International Research Institute of Disaster Science

Yo Fukushima

Vice Secretary-General, the Secretariat for the World Bosai Forum

Associate Professor, Disaster Science Division, International Research Institute of Disaster Science

Yuriko Kikuchi

Staff member, the Secretariat for the World Bosai Forum

Mayumi Abe

Staff member, the Secretariat for the World Bosai Forum

Sayaka Kobayashi

Staff member, the Secretariat for the World Bosai Forum

### Acknowledgements

We would like to express our special thanks to the following members for their great effort.

Jewel Amante, Reid Basher, Michihiro Chikata, Natsuko Chubachi, Tadao Hasue, Takuya Ito, Kanako Iuchi, Takako Izumi, Shuichi Kawashima, Fumiki Kojima, Hikari Komori, Shunichi Koshimura, Elizabeth Maly, Hiroaki Maruya, Erick Arturo Mas Samanez, Kana Moriyama, Osamu Murao, Susumu Ohno, Madoka Ono, Yasuaki Onoda, Daisuke Sasaki, Akihiro Shibayama, Anawat Suppasri, Sachi Suzuki, Yukie Suzuki, Kenjiro Terada. (Names listed in alphabetical order.)

## World Bosai Forum 2017 Session List

No.	Session Title	Host Organization	No.	Session Title	Host Organization
1	Information of Disaster Prevention save our lives	Japan Broadcasting Corporation	26	Regional Cooperation and Partnerships	ESCAP
2	Practical Build Back Better Efforts, and the Course of Action Hereafter	Disaster-Resilient and Environmentally-Friendly City Promotion Office, City of Sendai	27	Economic Recovery and Industrial Revitalization from the Great East Japan Earthquake	Earthquake Recovery Research Center, Graduate School of Economics and Management, Tohoku University
3	The Knowledge Front of Disaster Risk Reduction	Elsevier	28	Prepare and Respond Better for Emerging Technological Hazards	IFRC
4	Lessons and experiences from the Great East Japan Earthquake What should we learn and share from disasters?	Miyagi Prefectural Government	29	Integrated land-sea network for monitoring earthquakes, tsunamis & volcanoes for disaster risk reduction	National Research Institute for Earth Science and Disaster Resilience (NIED)
5	Talk x Talk Women in leadership 2017	Gender Equal Opportunity Section, City of Sendai Equal Opportunity Foundation	30	New perspective towards enhancing capability of assessing tsunami damage	International Research Institute of Disaster Science, Tohoku University
6	Aging and disability and disaster risk reduction in the community (Inclusive Society)	Tohoku Fukushi University	31	Roles of the media in disaster risk reduction ~ Cultivation through the media in normal times	Kahoku Shimpo Publishing Co.
7	A Multicultural Society and Disaster Risk Reduction: Good Practices Implemented by Multi-stakeholders	International Relations and Planning Section, City of Sendai / Sendai Tourism, Convention, and International Association	32	The future of nuclear energy policy lessons from the Fukushima Nuclear Power Plant Accident	Laboratory of Prof. Akihiko Morita/SHOKEI GAKUIN University
8	Seeking the structure of "Power of Culture" to support the revival of heart-Connecting hearts to impetus for moving forward	Cultural Promotion Section, City of Sendai	33	Vision and Future of Global Alliance of Disaster Research Institutes (GADRI)	Global Alliance of Disaster Research Institutes (GADRI)
9	Citizen Cooperation and Disaster Risk Reduction	Citizen Cooperation Promotion Section, City of Sendai	34	Rethinking the Roles of the Education Sector in DRR through Sustainable Development	Miyagi University of Education, Sendai
10	Developing sustainable community for disaster resilience and human resources development for disaster risk reduction	International Research Institute of Disaster Science, Tohoku University	35	Economic evaluation model for mainstreaming DRR in development issues -Where we are and where we go -	Pacific Consultants Co., Ltd.
11	Consensus-building for Reconstructing Disaster Resilient Society with Diversity and Gender Perspectives in Japan and the World	Japan Women's Network for Disaster Risk Reduction (JWNDRR)	36	Faith-based organizations contribution to Sendai Framework for Disaster Risk Reduction	Organizing Committee of the Symposium on Faith and DRR
12	Sustainable development through DRR Investment	Japan International Cooperation Agency (JICA)	37	Advanced approach to earthquake disaster prevention	K-Opticom Corporation, Kyoto University
13	How we effectively evaluate the value of DRR measures and investment as a tool for mainstreaming DRR in development issues	Pacific Consultants Co., Ltd.	38	Transdisciplinary Approach (TDA) for Building Societal Resilience to Disasters Efforts towards Achieving the Goals of Sendai Framework	Japan Society of Civil Engineers (JSCE)
14	To pave the way for safe and sustainable drone operations for the disaster risk reduction in Sendai - Collaboration with City of SENDAI, NTT docomo, Drone Tech Lab SENDAI	Drone Tech Lab SENDAI - City of SENDAI · NTT docomo Tohoku	39	Tracks and Scenarios of Student-driven Volunteer Activities: Focusing on Young Powers Embedded in Long-term Reconstruction after the Great East Japan Earthquake	Center for Service Learning and Extracurricular Activities, Institute for Excellence in Higher Education, Tohoku University
15	The Role of ICT in Disaster Risk Reduction ~A session about the envisioned future utilizing Fujitsu's ICT solutions~	Fujitsu Limited	40	Perspectives in Evidence-based Mental Health Disaster Response and Preparedness ~ Towards Effective International Cooperation ~	International Research Institution of Disaster Science, Tohoku University
16	Efforts toward Recovery and Reconstruction from the Great East Japan Earthquake ~ Focusing on infrastructure and Community Development ~	Tohoku Regional Bureau, Ministry of Land, Infrastructure, Transport and Tourism	41	Utilization of drone in case of disaster	Keio Research Institute at SFC
17	Financial Initiatives and Multi-stakeholder Partnerships for Disaster Risk Reduction and Resilience (tentative) Site Report on the Onagawa Nuclear Power Plant during the Great East Japan Earthquake	Development Bank of Japan Inc.	42	Fujitsu Limited: Accomplishing the SDGs and Solving Social Issues through ICT -Fujitsu is geared towards accomplishing the 2030 goal of United Nations Development Program through the creation of the Disaster Statistics Global Database	Fujitsu Limited
18	The 16th International Symposium on New Technologies for Urban Safety of Mega Cities in Asia (USMCA) -Global Risk with "Tangible Earth".	Tohoku Electric Power Co., Inc	43	AI and Disaster = Disaster seen in Watson	IBM Japan, Ltd.
19	Strengthening contributions to the international community through multidisciplinary disaster science research	International Research Institute of Disaster Science (IRIDeS), Tohoku University International Center for Urban Safety Engineering (ICUS), Institute of Industrial Science (IIS), The University of Tokyo (USMCA, Organizing Committee)	44	Engineering a Solution for Disasters: The Promise of Resilient Infrastructure	World Bank Tokyo DRM Hub
20	The progress of "Disaster Prevention" by the use of Social Platform	Association of Pacific Rim Universities (APRU) and Tohoku University	45	Platform on Water and Disaster -ICT, Economy, Community, Dynamics-	International Centre for Water Hazard and Risk Management (ICHAHM), Public Works Research Institute
21	MIRAI (Multisector Initiative for Research, Action, and Impact) -Co-designing social innovation in addressing disaster-risks through research action networks-	Tokyo Marine Group and Tohoku University Industry-Academia Collaboration Forum "Building a disasterresilient community in the Asia-Pacific-The power of science and insurance"	46	Disaster Digital Archives	IRIDeS, Tohoku University
22	Bridging the information and knowledge gaps	Facebook Japan	47	Word into Action; Contributing to Sendai Framework from Nursing	Radiological Nursing Society of Japan, Japan Academy of Gerontological Nursing, Japan Academy of Nursing Science, Japan society of Disaster Nursing
23	MIRAI (Multisector Initiative for Research, Action, and Impact) -Co-designing social innovation in addressing disaster-risks through research action networks-	ESCAP	48	A Synergy Framework for the integration of Earth Observation technologies into Disaster Risk Reduction	Global Partnership on Space Technology Applications for Disaster Risk Reduction (GP-STAR)
24	The 4th Asian Conference on Urban Disaster Reduction (ACUDR) -Current Situation and Problems on Risk Communication in Asia-	Japan CSO Coalition for DRR (JCC-DRR)	49	Marine ecosystems disturbances by Earthquake and Tsunamis: toward better restoration of coastal lives and fisheries through continuous marine ecosystem monitoring	Tohoku Ecosystem-Associated Marine Sciences

## Chair's Summary<sup>1</sup>

### 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

---

<sup>1</sup> 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.

group said – for 1000 years into the future. The outspoken efforts of the Mayor of Kuroshio to dispel negativism and face up to new projections of 34-meter tsunamis for his town was a lesson in leadership. The Festival also demonstrated how music, song and dance remained accessible in the aftermath of disasters, providing essential and enduring support to individuals and communities at times of adversity, and sustaining values of normality, hope and practical action over long periods.

The opening sessions of the main events described the 2011 disaster and the enormous efforts to recover from it, and the many lessons learned. Collaboration mechanisms were stressed as critical for the effective use of financial and organizational capacities in both the public and private sectors, and to develop community commitment and acceptance. Collaboration, built on foundations of trust, is reflected in Japan's principle of "self help, mutual assistance, and public assistance", and it is critical for our preparedness to face future events. Constant interaction is needed to develop knowledge bases and to guide and communicate scientific research to help policymakers and managers in their work. This should include awareness that the next disaster may be completely different, such as a volcanic eruption.

The need for continued public awareness raising and education was frequently mentioned, along with the task of creatively recording and communicating the intensely-felt human experience of disasters. Japan has a long history of large-scale disasters and innovation in disaster risk reduction, while also recognising the many shortcomings still to be addressed. Globally, disaster risk is seen as a key issue to address in sustainable development agendas, as is elaborated in the Sendai Framework.

Among the lessons from the 2011 event were: the importance of volunteer coordination; the development of staged risk-zoning of coastal areas; proactive efforts to rebuild old industries and stimulate new ones; the use of business continuity plans as a tool to upgrade business resilience; the importance of community social capital and of activities to sustain it; and the substantial upgrading of early warning and evacuation capabilities that has been achieved. All of these things reflect the "build back better" principle. Lastly, it was argued that we need to more systematically develop a "risk culture" where risk is incorporated naturally as a consideration in all aspects of life and society, and where everyone accepts their responsibility to play a part, however small, in prevention and preparedness.

Many valuable contributions were made in the multiple specialized sessions; here I endeavour to summarise the highlights under three headings: science and technology; policy and finance; and society and culture. Successful disaster risk reduction requires all three operating together; like a three-legged stool, it falls down if one leg is missing.

### Science and technology

Scientific knowledge is the foundation for understanding and action. Technology provides the tools to monitor, respond to, and mitigate risk. Exciting new science and technology included major advances in dynamic modelling of tsunami flows and inundation including: the transport of debris and sediments and the resulting damage impacts, partly as a result of very high speed computing capabilities and the availability of extensive data such as that generated by Japan's land-sea monitoring network of

seismometers, ocean buoys and ocean floor pressure sensors; a new concept for potentially predicting earthquakes an hour ahead; the use of drones for different aspects of disaster risk reduction; and big-data analysis of social media activity and surveillance camera imagery. Some of these technologies will require the development of appropriate regulation for effective application.

Applications of space-based technologies continue to progress and can be directly integrated into systems modelling, for example in water hazards management. Increasingly, scientific and technological advances are being forged through multi-disciplinary, multi-institute collaborations, including close cooperative work with the private sector and the application of the principle of client participation to clarify the purpose and design of the research. These approaches are also valuable to risk communication, early warning systems and multi-hazard assessment. An interesting field under development is the integration of ecosystem principles to disaster risk reduction; this is termed eco-DRR.

### Policy and finance

Coordinated effort on disaster risk requires sound policies to guide action and sufficient finance to support action. Here, we mainly considered two settings, firstly, developing country integration of risk reduction into sustainable development, and secondly, the 2011 Great East Japan Earthquake recovery. The value of disaster risk reduction investment is well recognised, as shown by significant and continuing investments in resilient infrastructure by countries and major donors, yet economics modelling of disaster impacts and ex-ante disaster risk reduction investment remains a work in progress, with results affected by the model choice and availability of input data. Studies are underway to develop investment strategies that are appropriate to the particular circumstances, of the country, the hazard, the sector and the risk-reducing intervention. Regional cooperation plays an important role in information sharing and support of high-risk low-capacity countries, as in typhoon warning for example. A key concept is that disaster risk reduction is an investment and not merely an expenditure.

Risk transfer and insurance can play an important role in recovering from the impacts of disasters, for governments, firms and households. Efficient risk transfer and insurance is highly dependent on quality science for the modelling and assessment of risks. International collaboration has facilitated the development of cooperative catastrophe insurance schemes at regional levels, for example for Caribbean country governments. A potent tool developed for the Tohoku recovery has been to link credit availability for firms to their adoption of well-structured business continuity plans; this incentivising approach enhances firm performance as well as community resilience. Regular systematic surveys of firms' status has been valuable to monitor and guide the recovery process. The build-back-better concept has been an important overall principle in the Tohoku recovery, for example underpinning the staged coastal protection approach, the raising of roads and embankments and the relocation of housing areas, as well as being central to the process of engagement with communities and other stakeholders.

Technological hazards are generally increasing and can pose significant problems of complexity, as illustrated by the nuclear plant failure in 2011, but there is plenty of past

experience of technological hazards to draw upon to guide disaster risk reduction efforts. Improvement in risk management and risk reduction for nuclear plants require a combination of high technological capacity and strong involvement of external stakeholders such as universities and particularly local communities, and the availability of objective information on risks.

### Society and culture

Disaster risk and its reduction are always mediated through the actions of individuals and groups operating in social organization and under prevailing culture and belief systems. I have already noted the insights of the Pre-Forum Festival in this respect. A central issue for many sessions was the differentiated interests and needs of groups, and the impact of exclusion from decision-making processes. To ensure that disaster risk reduction is effective and equitable, all relevant constituencies should be represented in decision-making and leadership. Failure to do so was seen as a potential risk driver. Special measures are needed to overcome widespread cultural practices that exclude women or discourage their participation. Careful consideration needs to be given to the needs of poor people, the elderly, people with disabilities, those with psychiatric illness, foreigners, and any others disadvantaged through any systemic reason.

Another perspective proposed was to present citizen involvement in bosai activities as a positive and effective practice to be encouraged in normal times as an ongoing mechanism for communication and implementation, for example for neighbourhood and school-based activities, and for fostering the participation of children and young people. Existing structures of social capital, such as university and school groups, volunteer organisations, and faith-based organisations, can play valuable roles in expanding community-based efforts in risk reduction and in response and recovery phases. The education sector needs to stress the role of risk in sustainable development and to integrate risk reduction into curricula. In the health sector, specific techniques are being developed to address the needs of mental health support in disaster preparedness and response, and discussions on improved approaches in nursing are underway. A number of points were made for communicating people's experience of disasters, such as through dialogue with disaster-affected people, a strong will and passion in conveying our lessons, and the proactive use of traditional and new forms of the media to communicate underlying risk reduction messages at times when public interest or concern in disasters is high.

To conclude, let me recall the words of Professor Torahiko Terada after the Great Kanto Earthquake of 1923: "Disasters strike when we forget them". This saying is well known to us Japanese. Now the World Bosai Forum has said, instead, "We can handle disasters because we do not forget them."

I thank you.