

# Asian Conference on Disaster Reduction 2022

## WHAT IS NEXT?

— Learning from the Past, Preparing for the Future —

### Compilation of Session Notes

ACDR2022 was held at Sendai International Conference Center on 10-12 March 2023 in Sendai, Japan. It adopted the theme, “WHAT IS NEXT? — Learning from the Past, Preparing for the Future”. ACDR2022 was organized against the backdrop of year 2023 that marks the 100<sup>th</sup> year of the Great Kanto Earthquake that struck Tokyo and the 12<sup>th</sup> year of the Great East Japan Earthquake. During the three-day event, participants and experts discussed the lessons from past disasters and the preparedness for what’s next in the unknown future. ACDR2022 gathered 81 on-site participants from 17 countries, comprising representatives from member countries, international organizations, private sector, and academic/research institutes. Additionally, it was attended by a total of 121 online participants from 22 countries.

### OPENING SESSION

Mr. TANI Koichi (Minister of State for Disaster Management and Ocean Policy, and a member of the House of Representatives, Government of Japan), in his opening speech, thanked the Asian Disaster Reduction Center (ADRC) and the participants for organizing the ACDR2022 in Sendai, particularly in the occasion of commemorating the 12<sup>th</sup> year of the Great East Japan Earthquake. He said that in this occasion, his thoughts were on the people impacted by the Turkey-Syria earthquakes that occurred on 6 February 2023. He was deeply saddened by the situation, knowing that many people died and thousands of houses collapsed. Since he experienced the Great Hanshin Awaji Earthquake 28 years ago, and took part in the recovery efforts in Kobe, Japan, he understood the difficulties and hardships experienced by the people affected by the Turkey-Syria earthquakes. In this context, he said that the Japanese government is committed to providing the utmost support to the people in the disaster affected areas based on their needs. Moreover, he stressed that it is important that the lessons learned from these experiences and expertise knowledges are widely shared, particularly in strengthening disaster prevention measures and accelerating the implementation of reconstruction projects. He concluded his remarks by expressing hope that the conference will serve as a starting point to further enhance disaster risk reduction measures and subsequently strengthen solidarity among countries.

Mr. Yunus SEZER (Head, Disaster and Emergency Management Presidency or AFAD, Türkiye), in his message which was read on his behalf by Mr. SASAHARA Akio of ADRC, expressed gratitude for the solidarity and generosity of the people around the world whom he believed as “a beacon of hope” for the people of Turkey during the difficult time. He reported that the earthquakes affected 11 provinces and had a direct impact on approximately 110,000 square kilometers. The earthquakes created two enormous ruptures on the earth’s surface, the longer of which stretched about 400 km across southern Turkey. After the main shock, more than 15,000 aftershocks were recorded in the four weeks. As immediate respond, the Turkish government directed all its capacity to the earthquake-affected areas in a short time. AFAD received overwhelming support from 86 countries that sent search and rescue teams,

which were so valuable in the response effort. Mr. SEZER, at the end of his message, said that “the earthquakes have changed the disaster management habits that the world has known”.

One minute of silence was observed for the people affected by the earthquakes.

Dr HAMADA Masanori (Chairman, ADRC and Professor Emeritus, Faculty of Science and Engineering, Waseda University), in his remarks, said that the Turkey-Syria Earthquakes on 6 February 2023 revealed that there remains a huge number of vulnerable houses and buildings all over the world without any reinforcement. He provided a background that the Turkish Republic joined the Asian Disaster Reduction Center in 2018, and since then, the government has been greatly contributing to the activities of ADRC. In his capacity as chairman of ADRC, he encouraged all member countries to further strengthen their partnerships to assist and support the people in affected areas and to provide guidance for a resilient recovery. He suggested that since ACDR2022 included discussions on the lessons from the 1923 Great Kanto Earthquake, participants could draw out a strategy against large-scale earthquakes in the future. He closed his remarks hoping that all participants could gain useful information and knowledge on DRR to guide their respective programs and activities in the future.

Ms. KORI Kazuko (Mayor of Sendai City), in her remarks, said that Sendai City is honored and grateful to the Cabinet Office and ADRC for organizing the ACDR in Sendai for the second time since 2015. She emphasized that March 11, the very day of the opening of ACDR2022, has a special meaning to the people of Sendai, as it marks the 12<sup>th</sup> year of the Great East Japan Earthquake. She expressed her appreciation to the DRR practitioners, experts, and officials from different countries to gather once again in Sendai to learn and discuss disaster risk reduction measures and she showed her hope for this conference will serve to prepare for the frequently occurring earthquakes and tsunamis as well as the intensifying storms and floods. Mayor Kori also stressed that 2023 is the mid-term point of implementing the Sendai Framework for Disaster Risk Reduction (SFDRR), where all signatory countries are conducting mid-term reviews. She said that Sendai City has drafted an interim report on the progress of implementing the SFDRR from the perspective of the local government, and this was presented at the World Bosai Forum, which was simultaneously organized with the ACDR2022 in the same venue. She ended her remarks with a commitment that Sendai will pass on the lessons learned from the Great East Japan Earthquake to Asian countries and the world.

### **SPECIAL SESSION ON THE CENTENARY OF THE GREAT KANTO EARTHQUAKE**

This session comprised three topics of discussions: 1) lessons learned from the 1923 Kanto earthquake and subsequent countermeasures; 2) new findings and remaining challenges from the 1995 Great Hanshin-Awaji Earthquake and the 2011 Great East Japan Earthquake; and 3) what needs to be done to mitigate damage in disaster-prone Asia.

The panelists in this session were: 1) Dr HAMADA Masanori, Chairman of ADRC and Professor Emeritus, Faculty of Science and Engineering, Waseda University; 2) Dr. ITO Shigeru, President of ADRC and Professor Emeritus of the University of Tokyo; 3) Dr. HASEMI Yuji, Professor Emeritus Faculty of Science and Engineering, Waseda University; 4) and Prof. SHIGEKAWA Kishie, Professor Faculty of Social and Environmental Studies of Tokoha

University. The session was moderated by Mr. YOSHIMURA Hidemi, former Chief Commentator at NHK Japan Broadcasting Corporation.

On the topic, *Lessons learned from the 1923 Great Kanto Earthquake and subsequent earthquake and tsunami countermeasures*, Dr Ito mentioned that safe town planning and modern urban design are inspired by the reconstruction of the Great Kanto Earthquake. The damages were expanded due to the societal structure of the time and served as the catalyst for a major step up in urbanism. Dr Hamada said that the Great Kanto Earthquake inspired the enforcement of seismic design, as the Urban Building Act came into force in 1920. The Urban Building Act was amended in 1924 to incorporate seismic coefficients, paving the way for full-scale seismic design. Dr Hasemi mentioned that during the earthquake, there were simultaneous fires that destroyed many houses. From that experience, fire control measures have been introduced in metropolitan areas. Prof. Shigekawa said that regarding social recovery, there was no public support. So, people with self-help and mutual aid in the absence of public support. Legal systems for response to a major earthquake and its victims at that time were not yet in place. She also mentioned that records of disaster area reconstruction were limited to urban reconstruction.

On the topic, *New lessons learned from the experiences of the 1995 Great Hanshin-Awaji Earthquake and the 2011 Great East Japan Earthquake and their Post-earthquake and tsunami preparedness*, Dr. Ito said that new lessons include disaster prevention town planning, public building safety, disaster prevention parks, and the development of disaster prevention centers. Societal and technological changes also influenced the need for disaster-resilient infrastructures.

One of the major changes is that external support becomes a prerequisite in the recent times. Dr Hamada said that after the Great East Japan Earthquake, measures such as tsunami evacuation towers and tsunami breakwaters were implemented. Dr Hasemi mentioned that securing firefighting routes and the formation of neighborhood disaster prevention communities have been promoted after the Great Hanshin-Awaji Earthquake by enforcing legal regulations to increase the number of fire-protected and fire-resistant buildings. Prof. Shigekawa said that among new lessons from the past large-scale disasters include the promotion of mitigation measures against major earthquakes (e.g. Nankai Trough mega earthquakes that are predicted to occur in the future). She added that it is probably difficult for citizens and various communities to realistically imagine the level of preparedness based on low-frequency mega-disasters. Furthermore, for the victims, the extent of their own damage is far more important than the scale of the earthquake. From this perspective, the issues that people and communities should address in the future should include measures to mitigate frequent windstorms, floods, and other disasters, including earthquakes.

On the topic, *How Japan's experiences and lessons from the three major disasters should be used for disaster mitigation in the Asian region*, Dr Ito said that the departments in charge of disaster management must do their best to save lives, giving importance to preparedness for emergency response. When considering national development, it is important to ensure that structures are disaster-resistant. Dr Hamada said that it is necessary to systematically promote projects, particularly in public buildings, such as seismic reinforcement of existing buildings and thorough seismic upgrading of new buildings. Incentives such as tax exemptions and preferential loan interest rates for earthquake-resistant buildings should be offered to

promote earthquake resistance in private buildings. He added that since its establishment in July 1998, the ADRC has been working to improve the disaster preparedness of the Asian region through the following: sharing information on disaster risk management through a variety of channels, trained more than 120 visiting researchers and other human resources, and development and dissemination of tools to support community disaster risk management activities. Dr Hasemi said that sharing the advancement and diffusion of sensing and monitoring sensor technology (e.g., seismic breakers, seismic gas meters, small fire extinguishing systems, and the use of IoT to prevent fires) is one way to spread knowledge and experience of Japan to other Asian countries. Prof. Shigekawa mentioned the importance of “people’s development” by promoting disaster education and improving disaster literacy. Japan has accumulated a variety of experiences and lessons that may be applicable and useful in the Asian region.

Mr YOSHIMURA concluded that since the Great Kanto Earthquake, disaster countermeasures both structural and non-structural have been developed, reviewed, and improved to withstand the changing dynamics of disasters. Based on the discussions, he proposed the concept, “Ethical DRR”. This concept means that all disaster risk reduction (DRR) efforts should not be confined within the scope of legal regulations, but should also promote ethical perspectives such as saving lives, leaving no one behind, and ensuring that people are safe from disasters through investments in prevention and mitigation efforts.

### **SESSION 1: Large-Scale Disasters and Countermeasures**

Dr SAKAMOTO Mayumi (Professor, Graduate School of Disaster Resilience and Governance, University of Hyogo) moderated this session. During the introduction, she stressed the importance of improving the countermeasures for large disasters. Water-related disasters, such as the unusually protracted floods in Pakistan in 2022, are getting more frequent and intense. Earthquakes, such as the Turkey-Syria Earthquakes on 6 February 2023, exhibit unknown dynamics and its occurrence remains unpredictable. These disasters are often transboundary, affecting people across different countries.

Dr ARASHIMA Chizu (Professor, International and European Union Law, Faculty of Global Communication, Kobe Gakuin University) presented the issues in transboundary disaster governance from the perspective of international law. She highlighted the importance of science-based data in negotiating treaties or bilateral agreements between countries in addressing transboundary disasters.

Mr Saleem Shahzad Malik (Director, Disaster Risk Reduction, National Disaster Management Authority, Prime Minister’s Office, Pakistan) presented the activities on disaster risk reduction and climate change adaption in Pakistan. He said that people in Pakistan are vulnerable to various risks. So, the government has been improving its disaster management system to address the challenges in disaster management during extreme events, such as the floods. Pakistan adopts new technology in disaster preparedness as well as use scientific data to inform its disaster risk reduction strategies.

Dr Le Minh Nhat (Deputy Director, Department of Natural Disaster Response and Recovery, Viet Nam Disaster Management Authority and Ministry of Agriculture and Rural Development) presented an overview of the disaster risk management system in Vietnam. He said that flood

is the most frequent disaster in the country. To address this, major financial and structural investments in flood control and management have been promoted. Flood control projects are among the priorities in the National DRR Plan for 2021-2025.

Mr Serik Aubakiro (Acting Director, Center for Emergency Situations and Disaster Risk Reduction) introduced the Center for Emergency Situations and Disaster Risk Reduction (CESDRR) which is a permanent intergovernmental body to help address transboundary disasters and emergencies. CESDRR was established through the agreement between the Government of the Republic of Kazakhstan and the Government of the Kyrgyz Republic. Among the objectives of the center include: 1) cooperation in disaster risk reduction, prevention and elimination of emergency situations; 2) mitigate factors of disaster risk, identify, assess, forecast and monitor emergency situation hazards; 3) coordinate mutual efforts and strengthen preparedness for effective and timely response to emergencies; 4) implement regional and international cooperation in DRR and emergency management; and increase the safety of life activities of the population during natural and man-made emergencies.

## **SESSION 2: Broaden Our Horizons for Disaster Data Linkage in SFDRR Implementation: Application of GLIDE (GLobal IDentifier Number)**

Mr Julio Serje, Director RobotSearch Software Inc., moderated this session. In the introduction, Mr Serje emphasized the role of disaster data management in disaster risk reduction. On one hand, there are still gaps in maintaining damage and losses data. On the other hand, most of the disaster data remain aggregated. These challenges exist on top of the fact that disaster data is getting more complex, and therefore, linkages of various data management tools in the region need to be promoted.

Dr Animesh Kumar (Head, UNDRR Office in Bonn, United Nations Office for Disaster Risk Reduction) presented the progress and advances in monitoring of Sendai Framework for Disaster Risk Reduction. He informed that as of February 2023, there are 156 cumulative number of countries using Sendai Framework Monitor to report on DRR progress. The Sendai Framework targets and indicators are also finding application in several intergovernmental processes, while the data has helped reporting on SDGs and being used by partner organisations in thematic reports and programmes. The challenge in reporting is that developing countries, especially LDCs and SIDS, are struggling to provide data to all targets and all indicators for the SFM. To help advance monitoring, new models and tools are being developed particularly in tracking of disaster losses and damages. The new model is expected to link climate-related variables, losses and damages, and disaster events.

Mr Baasansuren Demberelnyam (Director, Risk Management Department, National Emergency Management Agency, Mongolia) presented the practices and challenges of disaster data gathering and sharing in Mongolia. He said that one of the practices is *Spatial Information System* that NEMA established in 2019 in order to share hazard information nationwide. Among the challenges in data gathering are barriers to disseminating the registration templates and guidance to respected stakeholders for collecting raw data. In addition, there is limited human and technological capacities to provide an understanding of collecting and generating reliable data. As way forward, NEMA will strengthen knowledge and understanding of data disaggregation and its importance through training and other outreach activities.

Dr Chihun Lee (Senior Research Officer, National Disaster Management Research Institute, Ministry of the Interior and Safety, Republic of Korea) talked about the international cooperation on disaster risk reduction focusing on flood early warning systems. He highlighted the cooperation project with the Philippine government in installing flood early warning systems, which put emphasis on communication protocol.

Mr Rajesh Sharma (Programme Specialist (Global) Disaster Risk Information and Application Crisis Bureau, Bangkok Regional Hub United Nations Development Programme, Bangkok, Thailand) introduced UNDP's Digital Disaster Risk Reduction Maturity Model (DDRRMM). It is a diagnostic tool for the maturity of the digital ecosystem of disaster risk reduction and management practices. In developing this tool, UNDP conducted in-depth analysis of national disaster database systems, to support the new generation of disaster data and information systems in line with the level of digital maturity in countries. Mr Sharma highlighted that digital and data governance for DRR is useful in disaster management, and need to be promoted through legal and institutional frameworks, policies, strategies, and action plans, practical guidelines.

Mr Keith Paolo C. Landicho (Disaster Monitoring and Analysis Officer, ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management) presented the evolution of the ASEAN Disaster Information Network (ADINet), which is a repository of information concerning hazards and disasters that have happened in Southeast Asian region. Mr Landicho highlighted two types of linkages in ADINet. One is *Existing Linkages* that includes, linkages for validation, linkages for research application, and linkages for coverage. The other is *External Linkages* that includes, linkages for integration and linkages for enhancement. ADINet's linkage with GLIDE is under the linkages for integration.

Dr SHIOMI Yumi (Senior Researcher, Asian Disaster Reduction Center) presented the Global Identifier Number (GLIDE) initiative's improvements, particularly on open governance and better functionality. In terms of governance, a steering committee was established in 2021 as well as the three subcommittees: API, SOP, and New Product Development. In terms of development, two new manuals were drafted and crowdsourcing was introduced in 2022 to allow users to report "missing disasters in the GLIDE database". Linkages of GLIDE with other disaster data management tools has been constantly coordinated, such as the linkage with Reliefweb, Sentinel Asia, UNOSAT, ADINet, and ESCAP.

### **SESSION 3: The Provision of Information via Satellite for Disaster and Crisis Management.**

Dr Gerry Potutan (Senior Researcher, Asian Disaster Reduction Center and Visiting Associate Professor, Kobe University) moderated this session. In the introduction, Dr Potutan stated that based on anecdotal accounts, many people in Asian region have limited or no access to internet or cellular communications. Oftentimes, the warning information to evacuate does not reach the people at-risk, especially in mountainous or island areas. Promoting the provision of warning information via satellites, particularly the Quasi Zenith Satellite System (QZSS) of Japan can help address this challenge. QZSS can directly transmit warning information to: 1) individuals with receivers/ terminals; 2) outdoor electronic facilities and display the information; and 3) ground receivers to activate community alarms (e.g., siren and beam lights). He said

that the objective of the session is to highlight the progress of QZSS as a platform for providing emergency warning information.

Mr HONGO Nobuo (Deputy Director, National Space Policy Secretariat, QZSS Strategy Office, Cabinet Office, Japan) presented an overview of the utilization of QZSS for disaster and crisis management. Mr Hongo mentioned that one of the services under QZSS is the Satellite Report for Disaster and Crisis Management (DC Report). Disaster management agencies can provide warning information via QZSS satellites to communities at-risk even in the absence of internet or cellular services. As of December 2022, approximately 390 products are compatible with QZSS. Demonstrations of QZSS utilization are being conducted in Australia, Fiji, and Thailand.

Ms Gou Runjie (GIS Engineer, Social Innovation Division, NTT DATA Corporation) presented the outline and progress of the QZSS Project, which is jointly implemented by five partner organizations: Cabinet Office of Japan, NTT Data Corporation, Keio University, PASCO Corporation, Asia Air Survey, and ADRC. Ms Runjie said that the main purpose of the project is to create a system using the QZSS DC report service that is tailored to each country's needs and environment as well as to conduct QZSS DC Report Demonstrations before it officially starts operation in 2024. In the demonstrations, the project will identify requirements and issues for deployment of the system. It will be an opportunity to examine and apply the local features to early warning system.

Dr Hasi Bateer (Advanced Technologies Research Laboratory Infrastructure Systems Development Center, Asia Air Survey, Co. Ltd.) reported the outcomes of feasibility study for disaster information system using QZSS. The study covers 21 countries in Asia and Pacific region, and investigated the following: 1) conditions for receiving QZSS, 2) specific disaster cases and issues; and 3) Early Warning System implementation needs. Dr Bateer said that one of the common issues is warning information transmission. Transmission issues include: distortion of information as it passes through many channels; delayed arrival of information; and limited coverage of telecommunications network. He mentioned that in order to have an effective transmission of warning information, following characteristics must be present: robustness, immediacy, correctness, and comprehensiveness.

Mr ICHIKAWA Ryunosuke (Assistant Manager, Social Innovation Division, NTT Data Corporation) presented the results of QZSS demonstrations conducted in Thailand, Fiji, and Australia. In Thailand, the scenario was forest fire. By using QZSS, rangers can receive information directly wherever they are in the park. In Fiji, the scenario was tsunami, and station devices can receive transmission from QZSS and transmit it further by low power wide area network (LPWAN). In Australia, the scenario was bushfire. Information from QZSS can be received through smartphones. Following up on this promising result, the next demonstration will be more practical to include residents to receive messages on mobile terminals using different communication methods (e.g., Wi-Fi, LPWAN, and Bluetooth).

Ms Vasiti Soko (Director, National Disaster Management Office, Fiji) presented the rationale for utilizing QZSS in Fiji. Director Soko showed Fiji's location in the Pacific and highlighted that it is sandwiched between Vanuatu and Samoa, therefore that disasters occurring in those countries also affect Fiji. She presented the disaster management system and the DRR initiatives of NDMO Fiji. She stressed that risk communication is one of the limitations for DRR in Fiji. In this regard, the utilization of QZSS for Fiji is a welcomed endeavor.

Mr Socheath So (Senior Technical Officer, National Committee for Disaster Management, Cambodia) presented Cambodia's disaster risk management information system, particularly the Platform for Real-time Impact and Situation Monitoring (PRISM). This platform links field assessment information, early warning systems, satellite data, and baseline population and socio-economic vulnerability data to measure risk and impact in Cambodia. Mr So stressed that QZSS is expected to augment the PRISM by providing warning information transmission system that is tailored to the local environment. The project can increase Cambodia's ability to improve the Disaster and Crisis Management Report.

### **WRAP-UP AND CLOSING SESSION**

Mr SASAHARA Akio (Executive Director, Asian Disaster Reduction Center) wrapped-up the ACDR2022 by summarizing the calls for action under each of the thematic sessions. Session 1 called for the following actions: 1) Strengthening transboundary disaster governance, such as the Center for Emergency Situations and Disaster Risk Reduction (CESDRR) initiative in Central Asia; 2) Improving the disaster risk management systems as shown in the flood disaster experience in Pakistan using science-based data on climate change; and 3) Investing more in DRR, such as the financial investment in flood control and management in Vietnam. Session 2 called for the following actions: 1) Making disaster data accessible, understandable, and usable to people at the national and local levels, such as the Mongolia's initiative on disaster data governance; and 2) Promoting further linkages of the disaster data management tools, including: the new model of losses and damage tracking of UNDRR, the Digital Disaster Risk Reduction Maturity Model (DDRRMM) of UNDP, ADINet of AHA Centre/ASEAN, and GLIDE of ADRC. Session 3 called for the following actions: 1) Promoting the provision of warning information via QZSS to directly transmit warning information to the communities at-risk; and 2) Conducting QZSS Demonstrations in countries of Asia and Pacific region to tailor the prototype receiver according to the local environmental conditions.

Mr MURAKAMI Takeo (Director, International Cooperation Division, Disaster Management Bureau, Cabinet Office, Government of Japan), in his closing speech, mentioned that the three-day event provided technical knowledge, experiences, and lessons as shared by the speakers, experts, and practitioners. He stressed that what is equally important is the face-to-face interactions during the entire event that fostered networking of people. It created social bond that benefitted participants in following up the discussions and pursuing activities in line with the call to actions that came up in the conference. He recognized the presence of Fiji delegation, and said that Fiji might be a potential member of ADRC. On behalf of the Cabinet Office Japan, he committed continued support to ADRC activities.

Dr OGAWA Yujiro (Executive Secretary, Asian Disaster Reduction Center), in his closing remarks, said that despite some meaningful progress made in disaster risk reduction, large-scale disasters, such as the recent Turkey-Syria Earthquakes on 6 February 2023 that claimed over 52,000 lives, still occur. In this view, he said that it is essential that ADRC member countries shall relentlessly continue to work together in finding further ways to reduce disaster risks.