1. Asian Disaster Reduction Center (ADRC)

1-1. History of the Establishment of ADRC

Asian Disaster Reduction Center (ADRC) opened its office in Kobe, Japan, on 30 July 1998. The major steps leading up to formation of ADRC are described below.

International Decade for Natural Disaster Reduction (IDNDR)

At its 42nd General Assembly in December 1987, the United Nations designated the 1990s as the International Decade for Natural Disaster Reduction (IDNDR), and adopted a resolution aiming to sharply reduce the damage caused by natural disasters around the world, particularly in developing countries, through joint international action.

World Conference on Natural Disaster Reduction

In May 1994, the UN held the World Conference on Natural Disaster Reduction in Yokohama, Japan, to conduct an interim review of the decade-long IDNDR initiative and to propose an action plan for the future. At the meeting, the "Yokohama Strategy for a Safer World" was adopted, highlighting the importance of international cooperation in regions that share common types of disasters and disaster reduction measures. Disaster reduction activities have since been promoted throughout the world based on this strategy.

Ministerial-level Asian Natural Disaster Reduction Conference

As the first step toward regional cooperation under the Yokohama Strategy, the IDNDR Secretariat organized a meeting in Kobe in December 1995 to formulate a policy on disaster reduction cooperation in Asia. Cabinet members in charge of disaster reduction from 28 countries attended the meeting, which concluded with the adoption of the Kobe Disaster Reduction Declaration. This declaration consists of ideas for promoting international cooperation in disaster reduction, including a Japanese proposal to launch a feasibility study on a system for coordinating disaster reduction efforts in the Asian region.

Asian Natural Disaster Reduction Experts Meeting

The government of Japan and the IDNDR Secretariat jointly organized an expert meeting in October 1996 to hash out how a central disaster reduction system, as stated in the Kobe Disaster Reduction Declaration, might be created for the Asian region. The meeting was attended by key personnel in the disaster reduction bureaus of 30 countries, and they agreed to study the creation of the tentatively named "Asian Disaster Reduction Center (ADRC)" to serve as a secretariat for promoting activities under the proposed system.

Asian Disaster Reduction Cooperation Promotion Meeting

The government of Japan and the IDNDR Secretariat jointly organized a meeting in Tokyo

in June 1997 to discuss activities to be undertaken by the proposed center for disaster reduction system. Once again, key personnel from the disaster reduction bureaus of 23 countries attended the meeting, whose overall goal was to promote cooperation in disaster reduction efforts through specific actions. A proposal was made at the meeting to establish a center in Japan to serve as the secretariat for the proposed system.

Establishment of ADRC

With momentum gathering from this series of meetings, the government of Japan discussed the organization, budget, and other aspects of the proposed office with the other countries involved. With the cooperation of Hyogo Prefecture, ADRC was officially established in Kobe on 30 July 1998.

1-2. Composition

ADRC was established in Kobe, Hyogo prefecture, in 1998, with mission to enhance disaster resilience of the member countries, to build safe communities, and to create a society where sustainable development is possible. ADRC works to build disaster resilient communities and to establish networks among countries through many programs including personnel exchanges in this field.

The Center addresses this issue from a global perspective in cooperation with a variety of UN agencies and international organizations/initiatives, such as the United Nations Office for Disaster Risk Reduction (UNDRR), the United Nations Office for the Coordination of Humanitarian Affairs (OCHA), the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP).

At the outset, ADRC was comprised of 22 member countries, four advisor countries, and an observer organization. Armenia joined later, in August 2000, followed by the Kyrgyz Republic in July 2002, Pakistan in July 2005, and Yemen and Bhutan in December 2007, Azerbaijan in 2009, the Maldives in 2010, the Republic of Iran in 2012, and Turkey in 2018 bringing the number of member countries to 31. In March 2004, the US joined as the fifth advisor country to ADRC.

Reference: Corporate Status

20 years have passed since the establishment of ADRC in 2018. As its member countries have increased from 22 to 31 countries, as well as ADRC and its activities have been well-acknowledged in the DRR field, ADRC has decided to be apart from the umbrella of Urban Disaster Research Institute and reconfigure the domestic organizational structure. On 12 November 2019, ADRC was incorporated as Asian Disaster Reduction Center Foundation and will further accelerate its activities from the fiscal year 2020.

Table 1-2-1 Counterpart List of 31 Member Countries

country	organization
Armenia	Regional Survey for Seismic Protection (RSSP), Ministry of Emergency Situations
Azerbaijan	Ministry of Emergency Situations
Bangladesh	Ministry of Disaster Management & Relief
Bhutan	Ministry of Home & Cultural Affairs
Cambodia	The National Committee for Disaster Management (NCDM)
China	National Disaster Reduction Center of China
India	Ministry of Home Affairs
Indonesia	National Agency for Disaster Management (BNPB)
Iran	National Disaster Management Organization (NDMO)
Japan	Cabinet Office
Kazakhstan	Ministry of Emergency Situations
Republic of Korea	Ministry of the Interior and Safety
Kyrgyz Republic	Ministry of Emergency Situations
Laos	National Disaster Management Office (NDMO), Ministry of Labour and Social Welfare
Malaysia	National Disaster Management Agency (NADMA)
Maldives	National Disaster Management Authority
Mongolia	National Emergency Management Agency（NEMA)
Myanmar	Ministry of Social Welfare, Relief and Resettlement
Nepal	Ministry of Home Affairs
Pakistan	National Disaster Management Authority (NDMA)
Papua New Guinea	Department of Provincial & Local Government Affairs
Philippines	National Disaster Risk Reduction and Management Council (NDRRMC)
Russia	Ministry of the Russian Federation for Affairs for Civil Defence, Emergencies and Elimination of Consequences of Natural (EMERCOM)
Singapore	Singapore Civil Defence Force
Sri Lanka	Disaster Management Centre, Ministry of Defence
Tajikistan	Committee of Emergency Situations and Civil Defense
Thailand	Department of Disaster Prevention and Mitigation (DDPM), Ministry of Interior
Turkey	Disaster and Emergency Management Authority (AFAD) , Ministry of Interior
Uzbekistan	Ministry of Emergency Situations
Viet Nam	Viet Nam Disaster Management Authority (VNDMA), Ministry of Agriculture and Rural Development
Yemen	Ministry of Water & Environment

Fig. 1-2-1 Member Countries and Advisor Countries

1-3. Main Activities

ADRC engages in the following basic activities:

Information Sharing

- Provision of disaster information through its website
- Promotion of GLobal unique disaster IDEntifier (GLIDE) number system
- Organization of international meetings including Asian Disaster Reduction Conference (ACDR)
- Acting as the hub for using satellite imagery information for DRR

Human Resource Development

- Organization of seminars, workshops and training on disaster risk reduction
- Hosting of Visiting Researchers (VRs) from member countries

Building Community Capabilities

- Development and distribution of tools for encouraging community involvement
- Assistance to the activities of the Asian Disaster Reduction and Response Network (ADRRN)

2. Highlights of 2019/2020

2-1. Asian Conference on Disaster Reduction 2019

The Asian Conference on Disaster Reduction (ACDR) 2019 was held at the Sheraton Ankara Hotel & Convention Center in Ankara, Turkey on 25-27 November 2019. The conference was organized jointly by the Government of Turkey, the Government of Japan, and ADRC. An annually organized event, ACDR aims to promote the sharing of information and practices for implementing Sendai Framework for Disaster Risk Reduction (SFDRR) and the Sustainable Development Goals (SDGs), and to further enhance partnerships among ADRC member countries and international and regional DRR organizations. ACDR2019 was attended by 148 participants from 20 countries, as well as representatives of DRR organizations, the academic community, and the private sector. ACDR2019 constituted of an opening session, keynote speech, special presentation, and the five thematic sessions.

Fig. 2-1-1 Participants of ACDR2019

ACDR2019 began with opening remarks by H.E. Mr. Süleyman Soylu, Minister of Interior, Government of the Republic of Turkey, H.E. Mr. TAIRA Masaaki, State Minister of the Cabinet Office, Government of Japan, Prof. HAMADA Masanori, Chairman of ADRC, H.E. Mr. MIYAJIMA Akio, Ambassador of Japan to Turkey, and Dr. Mehmet Güllüoğlu, Head of the Disaster and Emergency Management Authority (AFAD). The keynote speech was given by Prof. Dr. Zeki Hasgür, Altınbaş University, on experiences and lessons learned from the Izmit Earthquake that struck on 7 August 1999. In the special presentation that followed, Mr. Paul Elliott Rosenberg, Associate Programme Management Officer of UNDRR encouraged ADRC-member countries to monitor their efforts in implementing the priority for actions of SFDRR.

Session one, on “Recent Challenges and Innovative Approaches for Disaster Risk Reduction,” highlighted cases demonstrating the application of the latest technologies, such as the monitoring and collection of information using satellite observations and GIS data.

In session two, various reports were given on “Earthquake and Tsunami Risk Management

Practices," including building health monitoring, building codes, mitigation of GLOF impacts, and efforts to raise disaster awareness. After the sessions, participants attended a Public & Private Disaster Reduction Seminar, which was a side event organized by the Cabinet Office of Japan, and then visited the headquarters of AFAD to observe their operation room.

On 26 November, the third session on the theme of "School DRR Education for Enhancing Capabilities to Cope with Unexpected Situation in Disasters" highlighted reports on school DRR education practices by member countries, UN and donor agencies, and NGOs. Also, a senior high school student gave a presentation on his experiences and lessons learned at a World Tsunami Awareness Day 2019 event that was organized in Hokkaido, Japan in 2019.

During session four on the "Development of Strategy for Regional Sandstorm Disaster Risk Reduction," presenters reported on the impacts of Sand and Dust Storms (SDS), as well as practices for monitoring and measuring these storms, and highlighted the importance of promoting cooperation among member countries and at the regional level.

During session five, entitled "Recovery from Mega-Disasters," member countries gave presentations on experiences and lessons learned in their recovery process, reaffirming the importance of preparedness and institutional arrangements for recovery.

Fig. 2-1-2 Session 5

To conclude the conference, ADRC Executive Director Mr. SUZUKI Koji and the session chairs summarized the sessions.

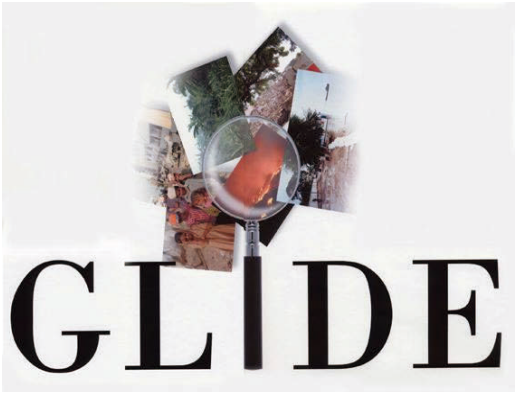
On 27 November, participants went on a field trip to learn about Turkish history and culture by visiting various museums and old streets in Ankara city. Details of ACDR2019 are available on the ADRC website at https://www.adrc.asia/acdr/2019_index.php.

Fig. 2-1-3 Visit to AFAD headquarters

2-2. Promoting Widespread Use of GLIDE

2-2-1. Objectives

The concept of GLIDE, GLobal unique disaster IDEntifier, which gives common but unique numbers to disasters all over the world was first proposed by ADRC. GLIDE aims to promote sharing disaster information among databases developed by many different DRR organizations, research institutions, and governments, contributing to improving global disaster resilience.



2-2-2. Overview

There are many organizations around the world that design and develop their own disaster databases for free access over the Internet. When a disaster occurs, information is distributed over the Internet not only by organizations in the affected countries but also by organizations and the mass media in other countries. ADRC, whenever a disaster occurs in any part of the world, collects information from websites of relevant organizations and news agencies all over the world, or by sending e-mails to contact persons in the affected area. The “ADRC Latest Disaster Information” on its website is the result of the ADRC's efforts in collecting information on disasters.

Based on the experiences, ADRC found some issues in collecting disaster information with abovementioned conventional methods. For example, the need to search many websites of relevant individual organizations every time a disaster occurs; no standardized naming protocol for disasters. Different names are given to a certain single disaster by various organizations; and the website links may be lost when an organization modifies the structure of its database or website.

GLIDE is a solution to these issues. It significantly improves the efficiency of retrieval of information on historical and on-going disasters from databases and websites.

At the Global Disaster Information Network (GDIN) Conference held in Canberra, Australia in March 2001, ADRC proposed to develop a standardized code system for managing information on disasters around the world. This proposal, then, was accepted as a pilot project of GDIN.

In 2004, glidenumber.net was jointly developed by ADRC and UNOCHA ReliefWeb with technical assistance from LaRED in order to issue new GLIDE numbers to disasters immediately after their occurrence. Moreover, ADRC, CRED, IRI/Columbia University, the USAID/OFDA, the WMO, IFRC, UNDP, and UNISDR Secretariat (current UNDRR) agreed to

use the GLIDE number format as the standard format for disaster identification numbers. At present, JAXA, Joint Research Centre (JRC/EC), etc. are utilized to descriptor disasters.

Once a disaster occurs, an operator of a GLIDE member organization issues a GLIDE number by inputting disaster information such as location, time, disaster type, initial damage. The issued GLIDE number appears on GLIDE website as well as is automatically emailed to some 2,000 subscribers.

GLIDE member organizations have different specialties and activity fields. Thus in GLIDE system, each organization issues GLIDE numbers based on its own criteria. For example, ADRC has its own criteria for issuing new GLIDE numbers. In case of Japan, a new GLIDE number will be generated for a disaster in which either 5 or more people are killed or 100 or more people are injured. In case of a disaster occurred in the Asian countries except Japan, a new GLIDE number will be generated for a disaster in which either 10 or more people are killed or 100 or more people are injured. At present, ADRC, UNOCHA ReliefWeb, IFRC, and JRC/EC are mainly issuing GLIDE numbers. So far, as many as 6,900 GLIDE numbers have been issued.

GLIDE number format

AA-BBBB-CCCCCC-DDD-EEE

AA: Disaster classification
BBBB: Year of occurrence (4-digit numeric figure)
CCCCCC: Serial number in one year
DDD: Country code (ISO code)
EEE: Local code

The local code at the end could be added for the convenience of the user countries in organizing their national databases

Disaster Classification

Drought	DR
Heat Wave	HT
Cold Wave	CW
Tropical Cyclone	TC
Extoropical Cyclone	EC
Tornado	TO
Violent Wind	VW
Severe Local Storm	ST
Flood	FL
Flash Flood	FF
Land Slide	LS
Snow Avalanche	AV
Mud Slide	MS
Volcano	VO
Earthquake	EQ
Fire	FR
Tsunami	TS
Storm Surge	SS
Epidemic	EP
Insect Infestation	IN
Wild Fire	WF
Others	OT
Complex Emergency	CE
Technological	AC

Fig 2-2-2-1 GLIDE number format and Disaster Classification

Fig 2-2-2-2 GLIDE website

(https://glidenumber.net/glide/public/search/search.jsp)

2-2-3. Status

In 2019, GLIDE marked its 15th year of the start of operation. The following activities were made to further promote GLIDE.

(1) Strengthening GLIDE System

Strengthening GLIDE system, especially its security was among its top priorities. For this purpose, the server of GLIDE was renewed with a new security measure, which will protect the server from the attacks and realize more stable service provision. Regular maintenance and timely review and strengthening of GLIDE system should be considered continuously.

(2) Stakeholders Meeting

When GLIDE system started, stakeholders meetings were organized, usually at the sideline of international conferences. However, with the lapse of time, persons in charge of GLIDE changed at several organizations, which made it hard to make coordination among GLIDE members. Due to changes in the situation about disaster data, ageing of GLIDE system,

revaluation of GLIDE system, there was increasing need for organizing stakeholders meeting in recent years. After coordination, GLIDE stakeholders meeting was finally realized.

In order to discuss the current situation and future of GLIDE, ADRC organized a GLIDE stakeholders meeting on 14 May 2019 at Internal Displacement Management Centre in Geneva, Switzerland using the opportunities of the sixth session of Global Platform for Disaster Risk Reduction. The meeting was attended by 15 persons from 6 organizations which play leading roles in GLIDE operation and have interests in collaboration with GLIDE.

At the opening of the meeting, ADRC Executive Director, Mr. SUZUKI Koji informed of the objectives of the meeting and expressed appreciation to participants for their cooperation with the GLIDE operation and attendance at this meeting.

Then, Prof. Ono, International Research Institute of Disaster Science (IRIDeS), Tohoku University, outlined its Global Centre for Disaster Statistics which was under construction, referring to the importance of accurate disaster data and possible collaboration with GLIDE.

Following the speeches, participants exchanged their opinions on a wide range of GLIDE issues such as the recent situation about disaster database, review of GLIDE management and operation system, review of disaster classification, setup steering committee, further collaboration with other organizations and so on.

It was the first time in more than 10 years since GLIDE stakeholders meeting was organized last time. Although some leading organizations were not able to attend this time, it was reconfirmed the importance of organizing stakeholder meeting regularly for continuing GLIDE progress.

Fig. 2-2-3-1 GLIDE Stakeholders Meeting

(3) The Way Forward

In order to further promote GLIDE and realize sustainable management, the following three issues are considered as challenges.

- Operation

The steering committee and thematic working groups should be established with GLIDE member organizations for more smooth system management and operation.

- GLIDE Website

Glidenumber.net, the website managing GLIDE numbers has several challenges. It should be updated to allow smartphone and tablet access for increasing GLIDE application, to improve functions, to strengthen security measures. For this, organizational efforts are required.

- Updates of comprehensive service functions

GLIDE has gained increasing expectations such as strengthened network with other organizations, and update of registered disaster data. It is required to consult and draw up a road map among the above-mentioned steering committee members.

3. Collection and Dissemination of Disaster Information

ADRC has been disseminating a wide range of information related to disaster risk reduction (DRR) on its website (http://www.adrc.asia) aiming at ensuring appropriate disaster response, mitigation, and preparedness activities.

3-1. Disaster Risk Reduction Activities of Member Countries

With support by its 31 member countries, ADRC has been collecting information on systems, plans, and policy measures of individual countries' disaster risk reduction as well as the situation of natural disasters. ADRC has also been collecting information from related materials, various countries/organizations and through Visiting Researchers (VRs) from the ADRC member countries and the United Nations Office for the Coordination of Humanitarian Affairs (OCHA). ADRC will continue collecting and sharing with member countries information on the following items, in particular: 1) Disaster management systems (legal and institutional frameworks, disaster management plans, and manuals), 2) Disaster response and recovery activities (emergency response activities in affected area/country), and 3) Natural disaster events (descriptions of natural disasters such as earthquakes, floods, cyclones, and so on, and the damages).

3-1-1. Information Collection from Member Countries

In fiscal year 2019, as in the previous year, ADRC collected DRR-related information on member countries through the following methods.

(1) Information provided from ADRC Member Countries

Besides the voluntary provision from the member countries, ADRC collected the information on DRR systems, plans, and policy measures of individual countries as well as situations of ongoing natural disasters through VRs.

(2) Collecting Information through International Conferences

ADRC collected and updated DRR information about current status, challenges, policies, actions and others of countries and relevant organizations through international conferences. In particular, in the Asian Conference on Disaster Reduction (ACDR) 2019 held in Ankara, Turkey, from 25 to 27 November 2019, ADRC shared the information and knowledge on innovative approaches for disaster risk reduction, earthquake and tsunami risk management practices, promotion of school DRR education, development of strategy for regional sand storm disaster risk reduction, and recovery from mega disasters. See the details on ACDR 2019 in the Chapter 2-1.

(3) Utilization of Internet

Utilizing internet, ADRC has been collecting disaster related information efficiently. Internet became important to facilitate technical support and building disaster information databases. Internet also helps ADRC to collect related information provided by academic research institutions and international organizations. ADRC has been using Facebook for providing information on latest activities of ADRC and VRs.

(4) Country Reports of Member Countries

Table 3-1-1 shows the list of the country reports provided so far by counterparts in member countries, which are made available on ADRC website. The reports were also updated in cooperation with VRs from member countries. Over recent years, many disaster risk management organizations in Asia have been actively promoting information dissemination by effective use of internet. Therefore, ADRC website has also provided direct links with these websites, which offer easy access to the latest information of each country.

Table 3-1-1-1 List of reports from ADRC member countries

Country	Year prepared
Armenia	2001, 2002, 2003, 2005, 2006, 2010, 2012, 2015, 2016, 2017
Azerbaijan	2011, 2014
Bangladesh	1998, 1999, 2001, 2003, 2005, 2006, 2010, 2011, 2013
Bhutan	2008, 2013, 2014, 2017, 2019
Cambodia	1998, 1999, 2002, 2003, 2005, 2006, 2013
China	1998, 1999, 2005, 2006, 2012
India	1998, 1999, 2002, 2005, 2006, 2008, 2012, 2015, 2018
Indonesia	1998, 1999, 2002, 2003, 2004, 2005, 2006, 2012, 2016
Iran	2013
Japan	1998, 1999, 2002, 2005, 2006, 2012
Kazakhstan	1998, 1999, 2002, 2005, 2006
Korea	1998, 1999, 2001, 2002, 2005, 2006, 2008
Kyrgyzstan	2005, 2006, 2012
Laos	1998, 1999, 2003, 2005, 2006
Malaysia	1998, 1999, 2003, 2005, 2006, 2008, 2009, 2011, 2018
Maldives	2013, 2014, 2015, 2018
Mongolia	1998, 1999, 2002, 2005, 2010, 2011, 2013
Myanmar	2002, 2005, 2006, 2013, 2018
Nepal	1998, 1999, 2005, 2006, 2009, 2010, 2011, 2014, 2019
Pakistan	2005, 2006, 2009, 2015, 2016, 2017

Papua New Guinea	1998, 1999, 2005, 2006
Philippines	1998, 1999, 2002, 2003, 2005, 2006, 2009, 2010, 2011, 2012, 2014, 2016, 2017, 2018
Russia	1998, 1999, 2003, 2005, 2006
Singapore	1998, 1999, 2001, 2002, 2003, 2005, 2006
Sri Lanka	1998, 1999, 2003, 2005, 2006, 2009, 2010, 2011, 2014, 2015, 2016, 2019
Tajikistan	1998, 1999, 2003, 2005, 2006
Thailand	1998, 1999, 2003, 2004, 2005, 2006, 2008, 2010, 2011, 2012, 2016, 2017, 2018, 2019
Turkey	2019
Uzbekistan	1998, 1999, 2005, 2006, 2013, 2015
Vietnam	1998, 1999, 2005, 2006, 2017
Yemen	2009, 2012, 2014

Country Reports include the following topics provided by each member country.

I. Natural Hazards in the Country

1.1 Natural Hazards that could Affect the Country

1.2 Recent Major Disasters

(Basic data of disasters, damage situation, response and recovery information)

II. Disaster Management System

2.1 Administration System

2.2 Legal System and Frameworks

2.3 Structure of Disaster Risk Management

2.4 Priorities on Disaster Risk Management

III. Disaster Risk Management Strategy, Policy and Plan

IV. Budget at National Level

V. Progress of the Implementation of Hyogo Framework for Action, Sendai Framework for Disaster Risk Reduction

VI. Recent Major Projects on Disaster Risk Reduction

VII. Counterparts of ADRC

3-1-2. Natural Disaster Data Book

(1) Background

Past disaster records are critical in policy making, review, survey and analysis of disaster management plan. ADRC concluded MOU on disaster data utilization with the Centre for Research on the Epidemiology of Disasters (CRED) and has conducted analyses on disaster impacts based on the database, Emergency Events Database (EM-DAT) maintained by CRED.

For instance, 20th Century Data Book on Asian Natural Disasters, and its revision released in 2000 and 2002 respectively featured natural disasters, which hit its member countries while annual Natural Disaster Data Book covers disaster characteristics in the world as well.

(2) Natural Disaster Data Book 2018

This section introduces the excerpts from Natural Disaster Data Book 2018 (Fig. 3-1-2-1), which covers regional and disaster-specific issues of the year and long term.

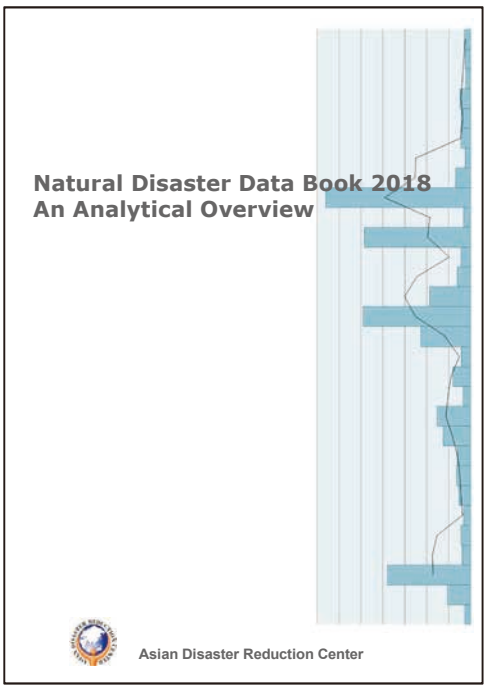


Fig. 3-1-2-1 Natural Disaster Data Book 2018

The Data Book shows the disaster trend from Year 1989 to 2018. As for the number of occurrence, it has been seen a decreasing trend, but still high in number. The number of people killed has been drastically decreasing, while the amount of economic damage has been in the increasing trend. The number of people affected has been slowly decreasing, but it has been depending on impacts of disaster events occurred.

According to EM-DAT recorded in 2018, 331 disaster events occurred, 14,385 people were killed, more than 80 million people were affected, and the economic damage reaches to over 130 billion US dollars. By disaster type, flood topped in the number of occurrence, and earthquake in the number of people killed, and storm in the amount of economic damage in 2018 (Fig.3-1-2-2 and Table 3-1-2-1) .

In year 2018, 4,340 people were killed by the earthquake and tsunami that hit Indonesia in September, over 23 million people were affected by a flood occurred in India, and more than 68 billion USD was economically damaged by storm and wildfire events occurred in the U.S.A.

Compared with the previous year, 2018 data shows small increase in the number of people killed, while the number of occurrence, people affected and the amount of economic damage have been decreased.

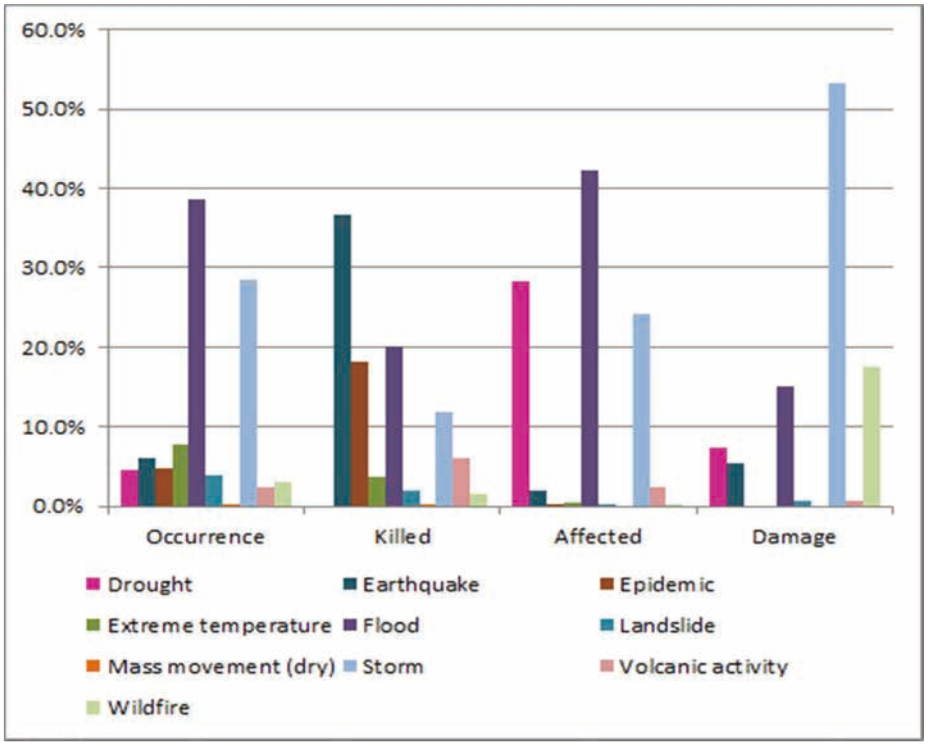


Fig. 3-1-2-2 Impacts of Natural Disasters by Disaster Type 2018

Table 3-1-2-1 Impacts of Natural Disasters by Disaster Type 2018

Disaster Type	*Impact*							
	Occurrence (share in %)		Killed (share in %)		Affected (share in %)		Damage (US$ million) (share in %)	
Drought	15	(4.5%)	0	(0.0%)	22,968,345	(28.3%)	9,554	(7.3%)
Earthquake	20	(6.0%)	5,264	(36.6%)	1,515,269	(1.9%)	7,114	(5.4%)
Epidemic	16	(4.8%)	2,601	(18.1%)	107,162	(0.1%)	0	(0.0%)
Extreme temperature	26	(7.9%)	536	(3.7%)	396,798	(0.5%)	0	(0.0%)
Flood	128	(38.7%)	2,881	(20.0%)	34,236,433	(42.2%)	19,692	(15.1%)
Landslide	13	(3.9%)	275	(1.9%)	54,908	(0.1%)	928	(0.7%)
Mass movement	1	(0.3%)	17	(0.1%)	0	(0.0%)	0	(0.0%)
Storm	94	(28.4%)	1,712	(11.9%)	19,693,372	(24.3%)	69,697	(53.3%)
Volcanic activity	8	(2.4%)	878	(6.1%)	1,909,098	(2.4%)	869	(0.7%)
Wildfire	10	(3.0%)	221	(1.5%)	261,287	(0.3%)	22,802	(17.5%)
Total	331	(100.0%)	14,385	(100.0%)	81,142,672	(100.0%)	130,655	(100.0%)

3-1-3. Disaster Information Sharing Using GLIDE Numbers

GLIDE is the acronym for the GLobal unique disaster IDEntifier system, in which commonly formatted but unique numbers are assigned to disasters all over the world. The GLIDE system was first proposed by ADRC and has been adopted and used by more than 20 international organizations and research institutes. Please find more information on GLIDE at Chapter 2-2.

3-2. Database on Disaster Risk Reduction

3-2-1. Latest Disaster Information

Once a disaster occurs, many DRR related organizations in and outside the affected country such as media, governments, international organizations, research institutions and civil societies start disseminating information about damage situations, relief and so on. Usually such information is issued separately and thus it has been difficult to collect necessary information from separate information sources at emergency.

ADRC has been sharing and updating latest disaster information of its member countries and major disaster information of the world including overview of the disaster (date of occurrence, area and outline) and damage situations, relevant links (reports, articles, map, relief, information from partners, imagery data and so on).

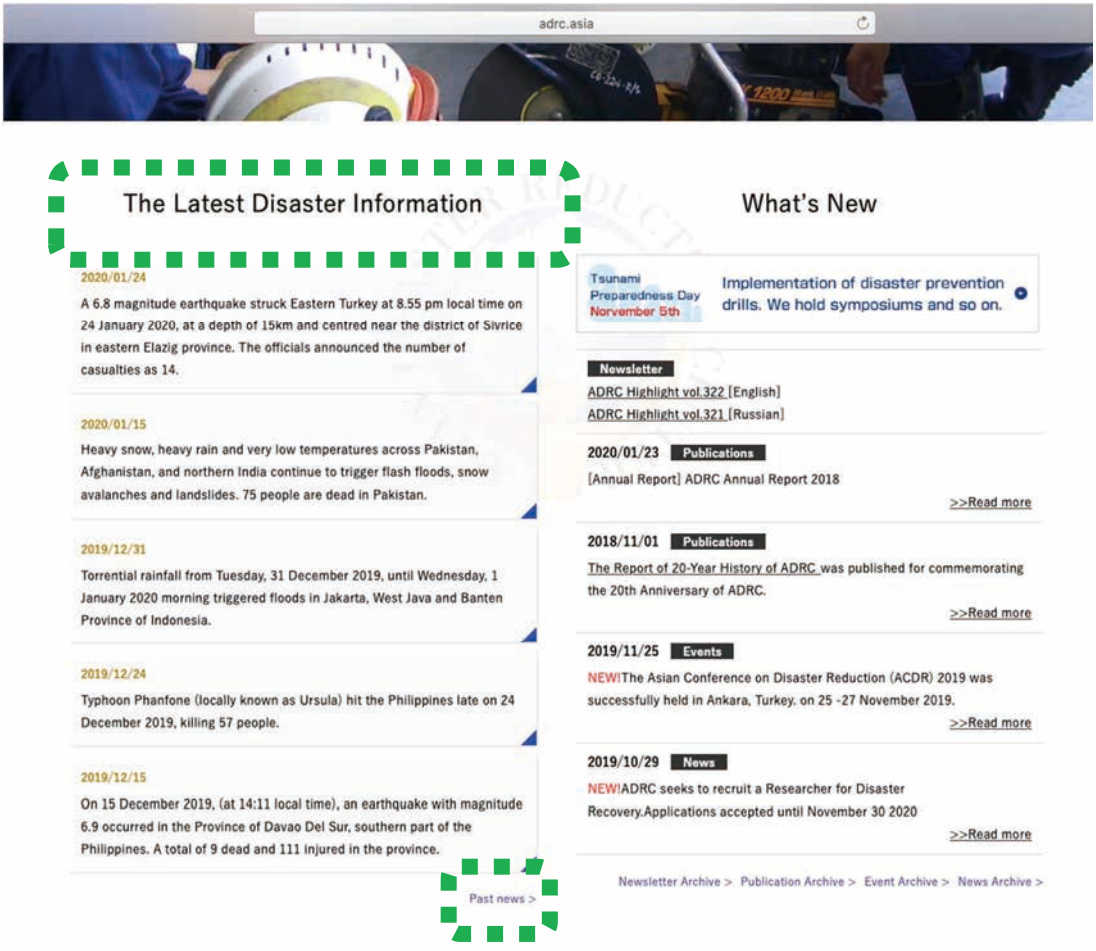


Fig. 3-2-1-1 Top Page of ADRC Website

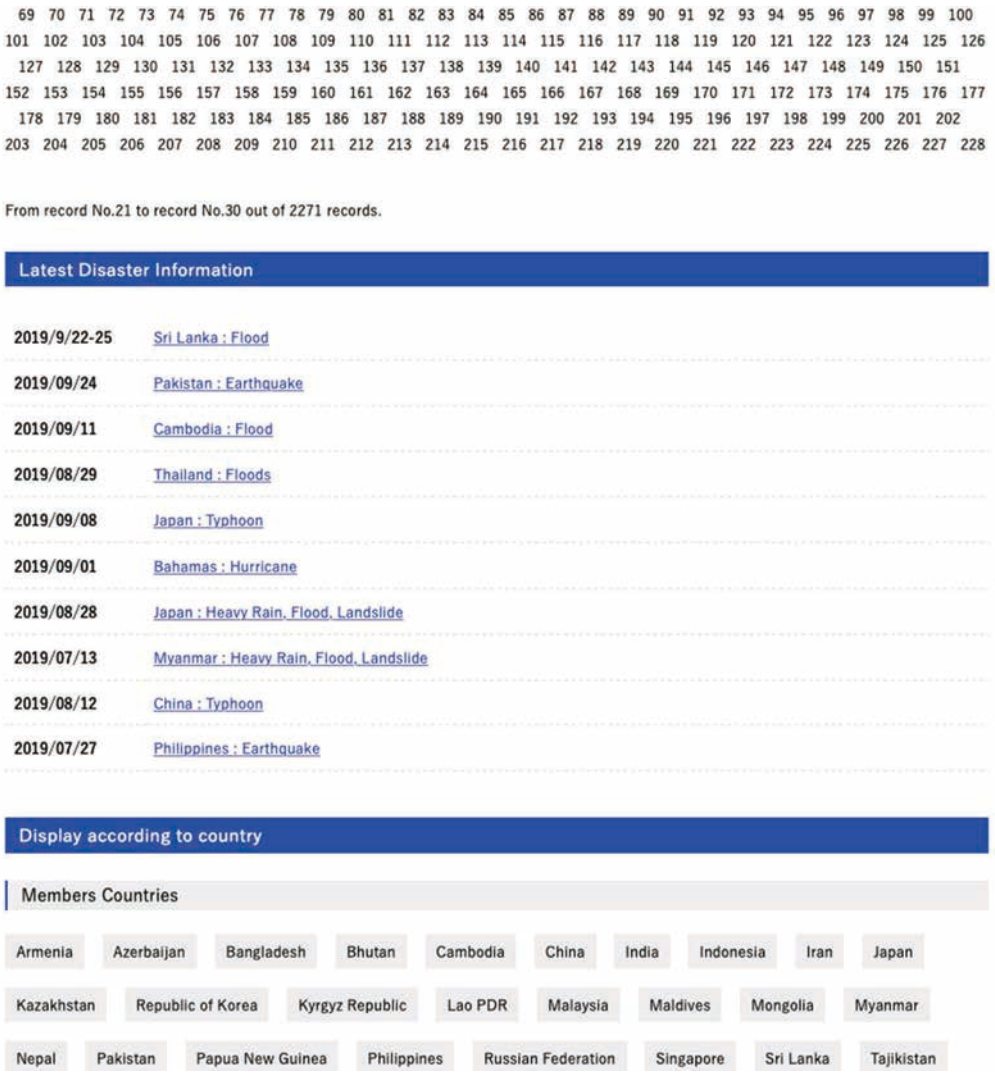


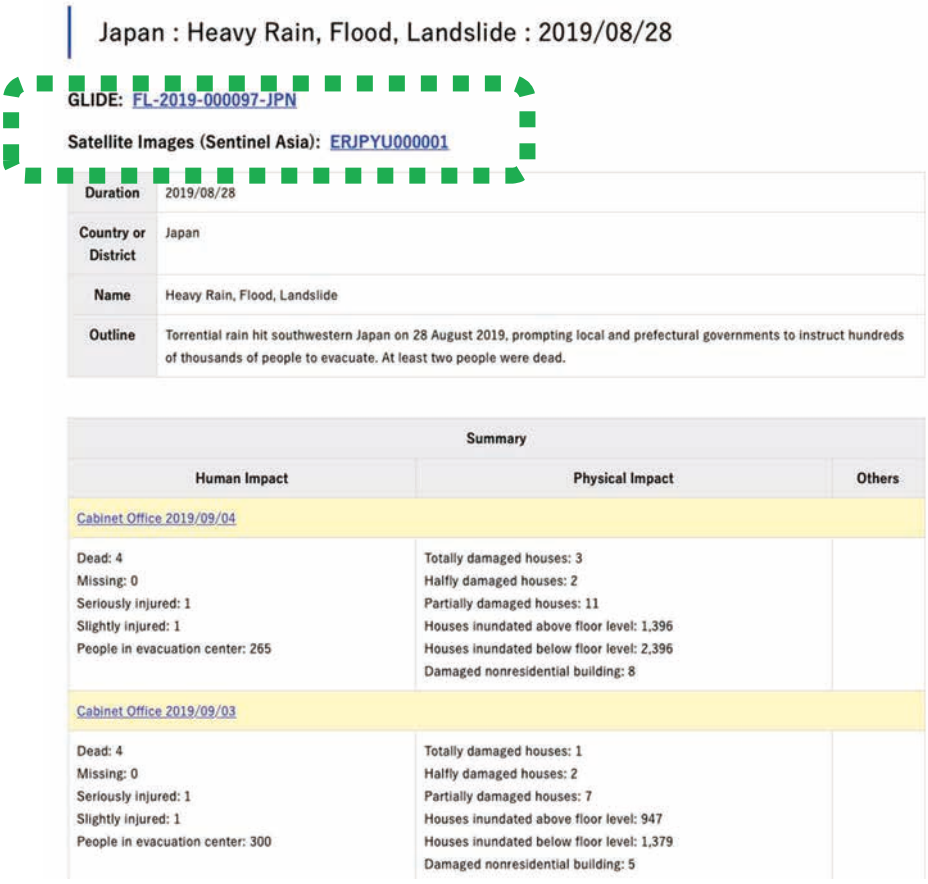
Fig. 3-2-1-2 Disaster Information page

Such latest disaster information is posted on top page of the ADRC's website as well as on Disaster Information page, linking to further detailed information (Fig. 3-2-1-1~ Fig. 3-2-1-3).

This section takes up a heavy rain, flood and landslide event occurred in Japan in August 2019 to show the structure of providing disaster information on the ADRC website (Fig. 3-2-1-1~Fig. 3-2-1-6).

Disasters that have occurred in Asia and the world are posted on the top page as the Latest Disaster Information (Fig. 3-2-1-1), as well as on the (Latest) Disaster Information page (Fig. 3-2-1-2) after some time passes. Then you can click a disaster you are interested in, and it takes you to Details of Disaster Information (Fig. 3-2-1-3). In upper part of the page, there are links to GLIDE number (Fig. 3-2-1-4) of the said disaster (FL-2019-000097-JPN) and Emergency Observation of Sentinel Asia. Then situation reports by relevant organizations are placed in the middle part. On the bottom part, there is a link to the Country Information which contains the information on trends of natural disasters, disaster management systems of member countries (Fig. 3-2-1-5). This information is updated accordingly with the original links, which would

facilitate users' information collection.



Japan : Heavy Rain, Flood, Landslide : 2019/08/28

GLIDE: FL-2019-000097-JPN

Satellite Images (Sentinel Asia): ERJPYU000001

Duration	2019/08/28
Country or District	Japan
Name	Heavy Rain, Flood, Landslide
Outline	Torrential rain hit southwestern Japan on 28 August 2019, prompting local and prefectural governments to instruct hundreds of thousands of people to evacuate. At least two people were dead.

Summary

Human Impact	Physical Impact	Others
Cabinet Office 2019/09/04		
Dead: 4 Missing: 0 Seriously injured: 1 Slightly injured: 1 People in evacuation center: 265	Totally damaged houses: 3 Halfly damaged houses: 2 Partially damaged houses: 11 Houses inundated above floor level: 1,396 Houses inundated below floor level: 2,396 Damaged nonresidential building: 8	
Cabinet Office 2019/09/03		
Dead: 4 Missing: 0 Seriously injured: 1 Slightly injured: 1 People in evacuation center: 300	Totally damaged houses: 1 Halfly damaged houses: 2 Partially damaged houses: 7 Houses inundated above floor level: 947 Houses inundated below floor level: 1,379 Damaged nonresidential building: 5	

Fig. 3-2-1-3 Details on the disaster occurred in Japan

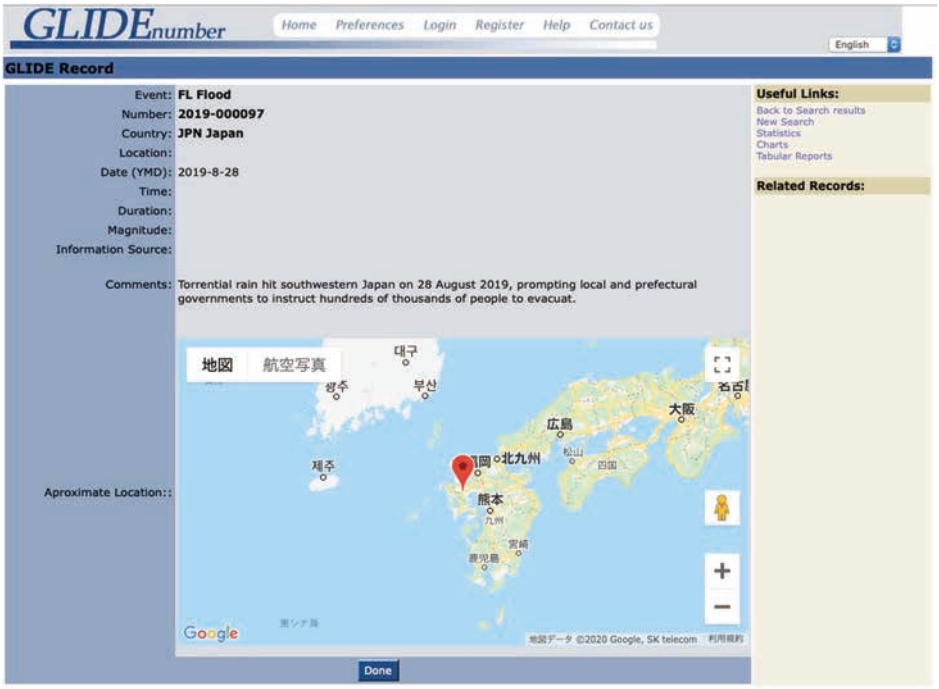


Fig. 3-2-1-4 Link to GLIDE

Japan

General Information

Formal Name: Japan
Japan is an island country located in the western Pacific Ocean. Total land area is about 378,000 square kilometers. More than 70 percent of land surface is mountainous. As it is situated along the circum-Pacific volcanic belt, Japan has several volcanic regions and frequently affected by earthquakes and Tsunami. A major feature of Japan's climate is the clear-cut temperature changes between the four seasons. In spite of its rather small area, the climate differs in regions from a subarctic climate to a subtropical climate. The side of the country which faces the Sea of Japan has a climate with much snow in winter by seasonal winds from the Siberia. Most of the areas have damp rainy season from May to July by the seasonal winds from the Pacific Ocean. From July to September, Japan frequently suffers from Typhoon.
The capital is Tokyo. Total population is about 127.77 million.

Overview of Disasters

Japan is affected by Typhoon mostly every year and Volcanic disasters triggered by eruption and volcanic earthquake. Japan is earthquake prone area due to the geological formation with plate boundaries of the Pacific plate, the Philippine Sea plate, the Eurasian plate, and the North American plate.

Fig. 3-2-1-5 Information on DRR of Member Country

Since FY2007, the website has been linked to JAXA's Disaster Management Support System, giving further value added information, namely satellite imageries of the affected areas (Fig. 3-2-1-6). As of 29 February 2020, a total of 2,372 disasters have been registered in the database.

Fig. 3-2-1-6 Emergency observation by Sentinel Asia

3-2-2. Asian Disaster Reduction Center Newsletter: ADRC Highlights

ADRC has been using Internet and e-mail to share information with its counterparts in the member countries, and other relevant parties. As one of its important tools for information dissemination, ADRC has been issuing the newsletter “ADRC Highlights” since 1 June 1999. It had been issued twice a month until FY 2007, and has been issued once a month since the renewal of its design in FY 2008.

Fig. 3-2-2-1 ADRC Highlights
(December 2019: English edition, Japanese edition, Russian edition)

The newsletter is made available on the website. Its text version is also e-mailed in English, Russian and Japanese to ADRC counterparts and former visiting researchers, former GLIDE visiting researchers, participants in the past ADRC annual meetings, visitors to ADRC, trainees in JICA's training courses which ADRC were involved in, and participants in international conferences which ADRC took part in to. Also ADRC registers e-mail addresses of those who wish to subscribe the newsletter upon the receipt of request e-mail. The numbers of subscribers in English, Russian and Japanese, are 2,158, 203 and 898 respectively as of 1 March 2020.

The contents include articles on the latest ADRC activities, reports on participation in international conferences, and other events which ADRC staff members attended and gave presentations in, as well as reports by ADRC Visiting Researchers from member countries and interns.

Table 3-2-2-1 Headlines from ADRC Highlights (FY2019)

Vol.	Main Articles
313	✓ Meeting of Three Education and Training Institutes on Disaster Management ✓ Notice of the ADRC website renewal
314	✓ Exchange of Opinions with the Legislative Counseling Office of the National Assembly of the Republic of Korea (2019 April 24) ✓ ADRC Staff Profile – KOBORI Kazuyuki, Senior Administrative Manager
315	✓ Global Platform 2019
316	✓ The 14th Meeting of the Typhoon Committee Working Group on Disaster Risk Reduction ✓ The 6th Earthquake Technology Expo in OSAKA
317	✓ 9th Annual UN-SPIDER Regional Support Offices (RSO) Coordination Meeting ✓ Public forum "Trilateral Disaster Risk Reduction and Relief Cooperation Among China-Japan-Korea"
318	✓ APEC-related Events ✓ Report from ADRC Intern: Intern, Ms. TAKAI Tamaki
319	✓ Study Tour on School and Community-based Disaster Risk Management for UNICEF Kyrgyzstan ✓ Expert Group Meeting to Combat Sand and Dust Storm, UNESCAP ✓ ADRC Visiting Researcher Report: Mr. Ozgur Tuna Ozmen (Turkey)
320	✓ JICA Knowledge Co-Creation Program: "School-based Disaster Education in Turkey" ✓ The UN International Conference on Space-based Technology for Disaster Risk Reduction and 10 Years Commemoration of the UN-SPIDER Beijing Office ✓ Announcement: Asian Conference on Disaster Reduction 2019
321	✓ Asian Conference on Disaster Reduction 2019 ✓ JICA Training "Comprehensive Disaster Risk Reduction for the African Region"
322	✓ HAPPY NEW YEAR 2020: HAMADA Masanori, Chairman, ADRC ✓ JICA Training Course: Promotion of Mainstreaming Disaster Risk Reduction ✓ 26th Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-26)
323	✓ ADRC Visiting Researcher Report - Mr. Beda Nidhi Khanal (Nepal) - Mr. Nima Tshering (Bhutan) ✓ Report from ADRC Intern: Mr. MATSUSHITA Takuma
324	✓ JICA Knowledge Co-Creation Program: Second Batch “School-based Disaster Education in Turkey” ✓ APEC-related Meeting (Malaysia) ✓ ADRC Visiting Researcher Report: Mr. Ranjith ALAHAKOON (Sri Lanka)

3-3. Providing Disaster Information by Utilizing Earth Observation Satellite

3-3-1. Sentinel Asia

(1) Objective

ADRC continues to participate in the Sentinel Asia project. The project was launched in 2006 with an objective of establishing a disaster risk management system by making the use of satellite images in Asia. ADRC functions as the focal point to receive emergency observation request in the framework of the Sentinel Asia. Upon receiving a request, ADRC decides whether the request is appropriate and whether the emergency observation should be implemented mainly by assessing the damages and casualties. Based on its own judgement, ADRC will forward the request to eight space agencies, namely, the ISRO (India), the JAXA (Japan), the GISTDA (Thailand), the KARI (Korea), the NARL (Taiwan), the CRISP (Singapore) , the MBRSC (Dubai) and the VAST (Vietnam) participating in the Sentinel Asia Project.

In accordance with the Cooperation Agreement between the United Nations Office for Outer Space Affairs (UNOOSA) and ADRC signed on 4 June 2009 on the establishment of the ADRC UN-SPIDER Regional Support Office (RSO), the ADRC UN-SPIDER RSO has been established within the ADRC office and operated by ADRC staff members as coordinators of the ADRC UN-SPIDER RSO.

ADRC, as a UN-SPIDER RSO, should thus work towards ensuring the successful implementation of the UN-SPIDER Work Plan thereby facilitating countries in Asia to have access to and develop the capacity to use space-based information to support the whole of disaster management cycle.

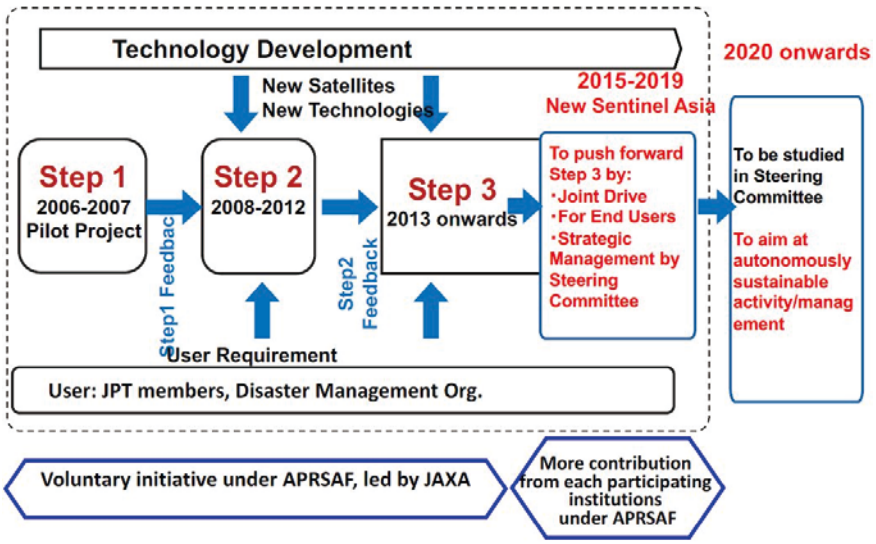


Fig. 3-3-1-1 Flow of emergency observation

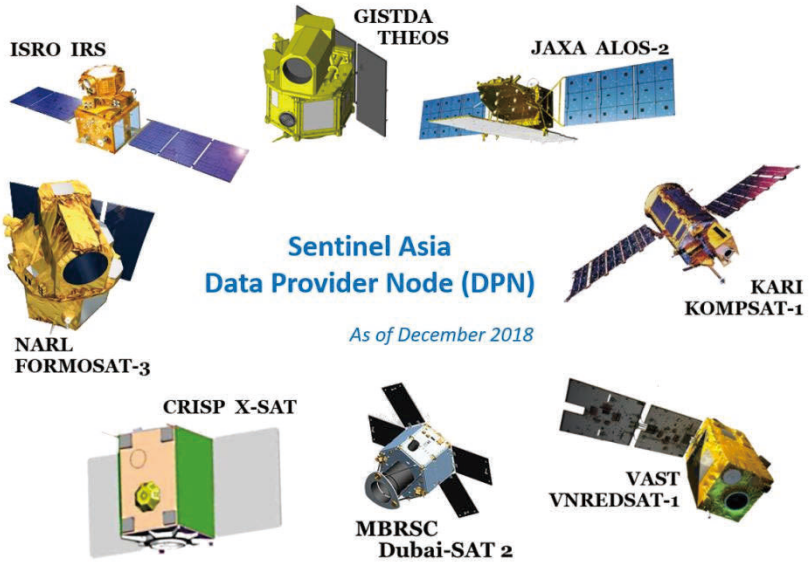


Fig. 3-3-1-2 Data Provider Nodes of Sentinel Asia

(2) Implementation of Sentinel Asia Step3 and Sentinel Asia Satiric Plan

A step-by-step approach for the implementation of Sentinel Asia was adopted as follows:

Step 1: Implementation of the backbone Sentinel Asia data dissemination system
Step 2: Expansion of the dissemination backbone with new satellite communication systems
Step 3: Establishment of a comprehensive disaster management support system

At APRSAF-19 (Asia-Pacific Regional Space Agency Forum, APRSAF) held in Kuala Lumpur in December 2012, successful completion of Sentinel Asia Step 2 was declared. Sentinel Asia Step 3 has the following concept, based on experiences in Step 2 and user requirements.

The Secretariat of Sentinel Asia and the main organization considered a Sentinel Asia Strategic Plan which is shown specific activity on Sentinel Asia for next 10 years. This Strategic Plan includes following themes and mentioned about a strengthen network between space agencies and disaster management organizations.

- Satellite Data Provisions and Systems
- Value Added Product (VAP)
- End-user Enhancement
- Step-3 Activities (Complete DRR cycle)
- Communication, Collaboration and Cooperation

(3) Emergency Observation Activities in the Past

Despite the year to year changes in the number of requests, the ratio of activated numbers

remains stable at around 80%. After a peak of 2010-2011, however, the number of requests reduced after ALOS, a laser sensor had stopped in May 2011, which might had affected the number of requests. From January to December 2019, 28 emergency observations were requested, 25 of which were undertaken, after the operation of ALOS-2, and succeeding satellite of ALOS had started from November 2014.

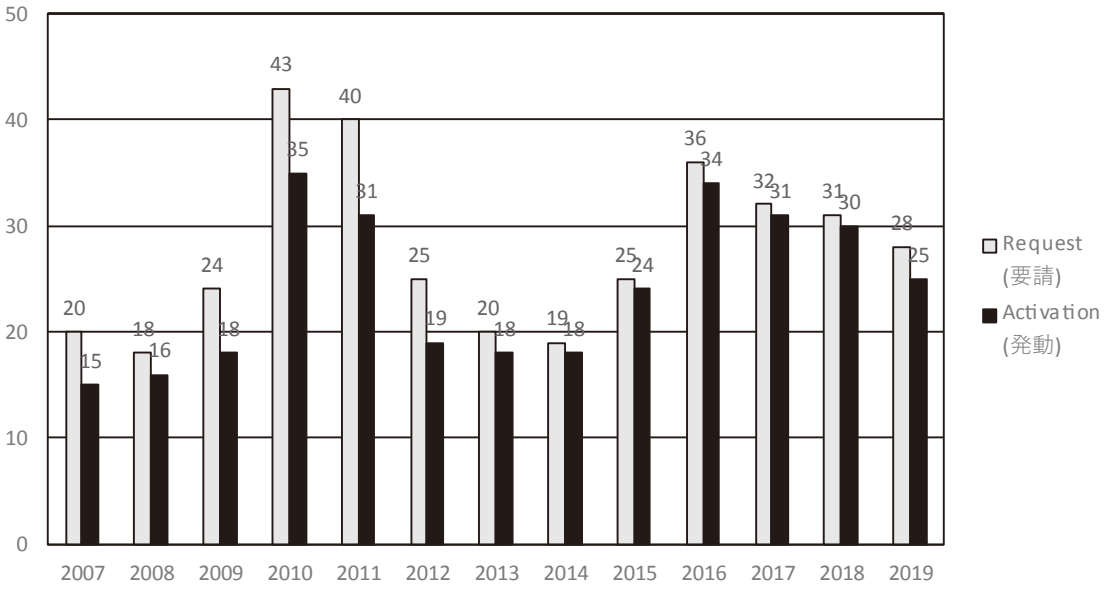


Fig. 3-3-1-3 Changes in the number of emergency observation 2007-2019

Looking at the breakdown of type of disaster from 2007 to 2019, the ratio of flood and earthquake occupies for around 65% of the total (Fig. 3-3-1-4).

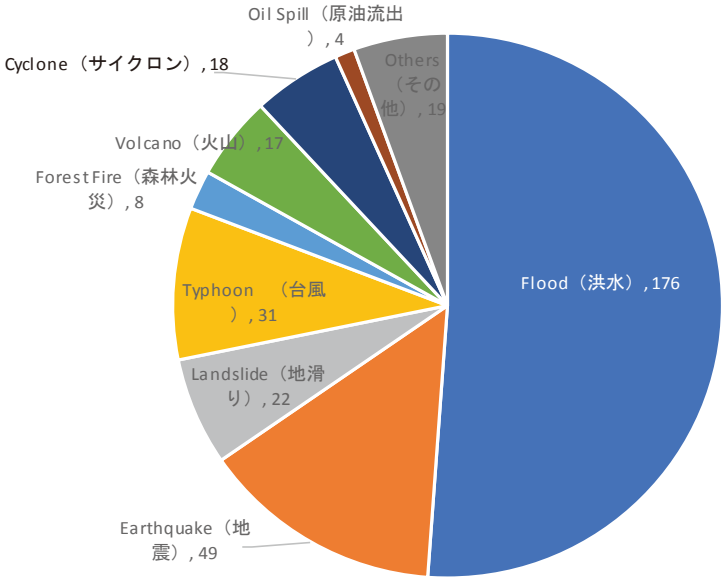


Fig. 3-3-1-4 Breakdown by type of disaster (N=344)

(4) Sentinel Asia New Website

Sentinel Asia has been provided a lot of data and information in Step 2 system. However there were latest additional data and information for emergency observation in recent year. The Secretariat of Sentinel Asia opened a new Sentinel Asia website in 2019. Also new EOR system, named OPTEMIS, was published for JPT members.

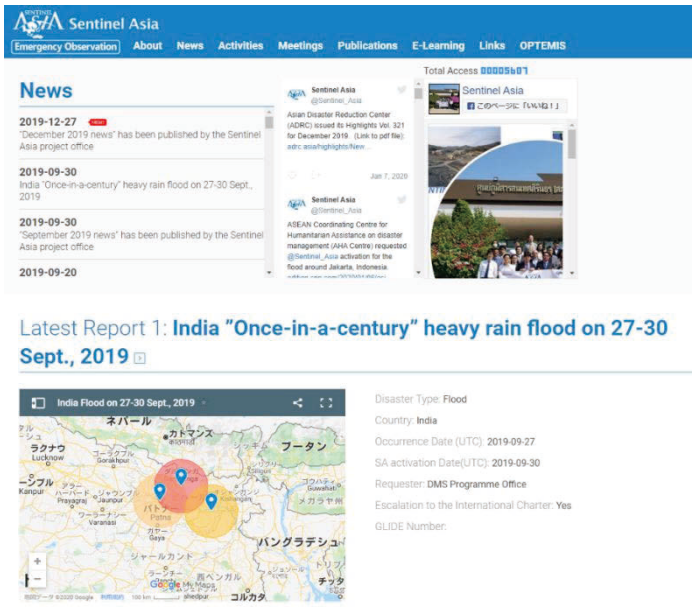


Fig. 3-3-1-5 Sentinel Asia's new website

3-3-2. Participation in the International Conference on Sentinel Asia

(1) 9th Annual UN-SPIDER Regional Support Offices Coordination Meeting

ADRC participated in the 9th Annual UN-SPIDER RSO Coordination Meeting in Vienna, Austria on 18-19 June 2019. The participants shared the latest initiatives and challenges in their regional activities including capacity building, sharing knowledge, and raising awareness. Mr. SUZUKI Koji, Executive Director of ADRC, briefly introduced the ADRC's latest initiative in building an early warning system platform using space-based technologies.

During the meeting, ADRC also noted that more DRR strategies are expected to be developed for implementing the Sendai Framework, and space-based data and information could play an important role in that regard. A lot of countries have challenges in identifying disaster risks since the data and information necessary for identifying risks are not readily available. They can overcome those challenges by introducing remote sensing data and the use of information provided by satellites.

In June 2009, ADRC and UNOOSA signed a cooperation agreement on the establishment of the ADRC UN-SPIDER RSO on the occasion of the 52nd session of the Committee on the Peaceful Uses of Outer Space (COPUOS). As for the application of space-based technologies and information in DRR, ADRC has been playing a major role in Sentinel Asia, which

facilitates space-based information application and capacity development.

ADRC believes it is necessary to harmonize the functions and activities of Sentinel Asia and UNSPIDER/RSO to achieve more effective emergency observations and improve the application of space-based information in DRR. ADRC will continue to explore opportunities for collaboration with UNOOSA and RSOs.

Fig. 3-3-2-1 Discussion at UNSPIDER RSO Coordinating Meeting

(2) The UN International Conference on Space-based Technology for Disaster Risk Reduction and 10 Years Commemoration of the UN-SPIDER Beijing Office

ADRC participated in the United Nations International Conference on Space-based Technology for Disaster Risk Reduction and 10 Years Commemoration of the UN-SPIDER Beijing Office on 11-12 September 2019 in Beijing, China.

ADRC has been playing a leading role in facilitating the application of space-based technologies and data to DRR through Sentinel Asia, and also has committed to a partnership with UNOOSA as a RSO of UN-SPIDER. At the conference, the RSOs of UN-SPIDER, including ADRC, were invited to the stage and presented with plaques. ADRC gave presentations during the sessions on “Advances in Earth Observation and Open Source Data to Support DRR” and “Networking and Engagement with the UN-SPIDER Network.” For space-based data to be more effectively used in DRR, it is critical to further discuss the data use polices of relevant agencies to ensure easy access to data.

Fig. 3-3-2-2 UN International Conference on Space-based Technologies for DRR

(3) Participation in the Seventh Joint Project Team Meeting for Sentinel Asia STEP3

ADRC participated in the Sixth Joint Project Team (JPT) Meeting for Sentinel Asia, which was organized by JAXA and the Asian Disaster Preparedness Center (ADPC) from 12 to 14 November 2019 in Bangkok, Thailand. About 50 participants including representatives of satellite agencies, disaster management organizations, and academic institutions in Japan attended the meeting. The meeting primarily covered the following topics:

Session 1: Overview
Session 2: New Membership
Session 3: Users' Session
Session 4: Training Workshop
Session 5: Strengthened link between Sentinel Asia and the Sendai Framework
Session 6: Project Management Session
Session 7: Wrap-up session

ADRC presented information on the activation of emergency observations in 2018. A training session was held which is related to a new observation system, named “OPTEMIS”, on 13 November. All of participants tried to request by using this new system. Also Mr. Suzuki, ADRC Executive Director and co-chair of the event, gave closing remarks.

Fig. 3-3-2-3 Group photo

(4) International Conferences 26th Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-26)

The 26th Session of APRSAF was held from 26 to 29 November 2019 in Nagoya, Japan. It was co-organized by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and JAXA.

APRSAF was established in 1993 to enhance space activities in the Asia-Pacific region. Attended by space agencies, governments, and international organizations such as the United Nations as well as companies, universities and research institutes, this forum is the largest

space-related conference in the Asia-Pacific region. APRSAF has four Working Groups: the (1) Space Applications Working Group (SAWG), (2) Space Technology Working Group (STWG), (3) Space Environment Utilization Working Group (SEUWG), and (4) Space Education Working Group (SEWG). APRSAF participants share information about their activities and future plans for their countries and regions in each working group. APRSAF also supports international projects designed to find solutions to common issues such as disaster management and environmental protection.

The Sentinel Asia initiative is one such activity and involves the use of space-based information in the form of satellite images for disaster management. ADRC has been tasked with the responsibility of receiving emergency observation requests from ADRC member countries and JPT members. ADRC joined SAWG and reported on trends in Sentinel Asia emergency observation requests and its future action plans.

Fig. 3-3-2-4 Presentation

(5) 12th Sentinel Asia Steering Committee

On 21 and 22 January 2020, the 12th Sentinel Asia Steering Committee was held in National Remote Sensing Center (NRSC) in Indian Space Research Organization (ISRO), Hyderabad, India. JAXA and NRSC-ISRO jointly organized the meeting. ADRC Executive Director, Mr. Suzuki participated in the meeting as a co-chair of the Steering Committee.

Fig. 3-3-2-5 Group photo, Steering Committee members

It was announced that Dr. Lal Samarakoon, the other co-chair and the former director of Geoinformatics Center (GIC)-Asian Institute of Technology (AIT) would retire from the co-chair post at the end of 2020. As for the vacant co-chair post, ADRC Mr. Suzuki suggested that the co-chairs be selected from the space-community and also from the data analysis community. The Sentinel Asia secretariat would consult with the Steering Committee members on how they would select the co-chair(s), including the process of selection. They will discuss this matter on web-based meeting.

Fig. 3-3-2-6 Session discussion

The new partnership with private companies has been discussed in the last face-to-face steering committee in Sri Racha, Thailand. They clarified the challenge of the data policy in the partnership framework. If the data server of the application supported by the private company is installed in the supporting private company, it would be against the data policy of some space agencies. They argued that ESRI support to Sentinel Asia with its ArcGIS application might not be accepted.

In the Steering Committee, they argued the Sentinel Asia membership issue of KARI Korea. The Sentinel Asia Secretariat proposed to send KARI a document to ask if KARI would stay in Sentinel Asia. Co-chair, Mr. Suzuki proposed that he could informally visit KARI and jointly clarify the challenges for KARI to stay in Sentinel Asia. They agreed that a co-chair would visit Republic of Korea for the informal meeting with KARI after April 2020.

In the Special Session of this Steering Committee, which was organized by ISRO, it introduced a wide variety of its initiatives on space-based technology applications to DRR, including monitoring technologies of disaster events.

3-4. Study on Disaster Resilience Policies and Measures for Sustainable Economic Growth in ASEAN Region

The Asian region is geographically prone to natural disasters and, at the same time, it is densely populated. Therefore, once a natural disaster occurs, the human suffering will be considerable. Furthermore, as the region is also home to industrial clusters in which many manufacturers, particularly Japanese companies, are concentrated, the economic losses due to such disasters are substantial. With the flooding that occurred in Thailand in 2011, the global supply chains of the automobile, electronics and electrical industries that had part of their production bases in Thailand were cut off, and it was a great blow to those industries.

Especially, the growth of the ASEAN region is remarkable, with the population set to reach 730 million by 2030. It is said that, with further advances in economic integration, it will rank as the world's fourth-largest economy by 2050. For this reason, the economic losses due to natural disasters are ever more severe, and such losses are estimated to average $4.4 billion per year. In other words, suppressing the human and economic cost of disasters occurring in the ASEAN region is of benefit to the global economy as a whole.

With this background, the Economic Research Institute for ASEAN and East Asia (ERIA) and ADRC agreed to conduct the ERIA Research Project "Study on Disaster Resilience Policies and Measures for Sustainable Economic Growth in ASEAN Region". Utilizing its own network, ADRC requested three Japanese experts to prepare papers to provide policy advices on the following themes. They will be compiled by August 2020.

[Theme 1] Comprehensive examination and verification of the natural disasters and economic damage that have occurred in the ASEAN region
[Theme 2] Study on disaster resilience in private sector of Japan
[Theme 3] Low regret investment in disaster risk reduction for sustainable development

The outcomes are expected to include several policy recommendations as shown below:

- Policy implications and suggestion on specific categories and characteristics of economic damage by natural disasters in a target country and field, based on statistical analysis.
- The necessity of developing business continuity plans and its implications on policy choices based on analysis of the relationships between the natural disasters and economic damage that has occurred in recent years.
- The state of implementation of DRM and/or BCP/BCM in private sector of Japan, and sharing of information on their contents, as policy reference for ASEAN member states.
- Proposals on implementation of DRM and/or BCP / BCM for the ASEAN region.
- The importance of low or no regrets investment aimed at disaster mitigation, based on large-scale natural disasters such as the Great East Japan Earthquake.

4. Human Resource Development

4-1. Human Resource Development and Information Networking on Visiting Researcher (VR)

4-1-1. Background

Since 1999 ADRC has been conducting Visiting Researchers (VR) program. As of February 2020, 117 officials from 27 member countries have participated in the program, as human resource development as well as disaster information.

During the program, VRs will learn latest knowledge and technology on DRR and international cooperation of Japan at ADRC. VRs are expected not only to contribute to strengthening the capacity on DRR in their countries, but also to further promote cooperation between their countries and ADRC.

4-1-2. Objectives

The objectives of networking on VR are as follows:

- To accumulate the latest disaster information, disaster management policy, laws, plans and budget of the member countries for strengthen their disaster resilience;
- To analyze the policies through the collection and the surveying of good practice of the DRR measures of the member countries.
- To develop effective capacity development programs and tools based on needs and priorities of VRs and their countries;
- To continue improving VR program taking their feedback into consideration. Input from VRs are as follows;

  - The length of the program is appropriate and sufficient,
  - The contents of program are of great benefit, especially in visiting central and core disaster management organizations such as Cabinet Office, Japan Meteorological Agency and municipalities. Practical researches/exercises are highly evaluated and needed.
  - Participation in international meetings and exchanging opinions with experts is beneficial.
  - Networking among former and existing VRs is valuable. For this purpose, to have reunion opportunities is desirable.

4-1-3. Activities of Visiting Researchers in FY2019

In FY 2019, the following six researchers joined the program; two researchers in the first half year from Republic of Korea and Turkey; and four researchers in the latter half year from Bhutan, Nepal, Sri Lanka and Thailand.

(1) Republic of Korea

- ☐ Dr. / Mr. Changhyun Kang
- ☐ Job Title at the time of visit: Professor of Dankook University, Korea
- ☐ Dr. Kang researched on risk of small-scale and large-scale, frequent and infrequent, sudden and slow-onset disasters caused by natural or man-made hazards. It is as well as related with environmental, technological and biological hazards and risks in the Republic of Korea.

(2) Turkey

- ☐ Mr. Özgür Tuna Özmen
- ☐ Job Title at the time of visit: Geophysical Engineer, Disaster and Emergency Management Presidency (AFAD)
- ☐ Turkey and Japan have much experience about earthquakes in history. It is necessary to consider evaluation methodology about this matter. Mr. Tuna researched on statistics data in this topic and confirmed an importance about developing early warning system. Also he suggested more effective countermeasure against earthquakes in his research.

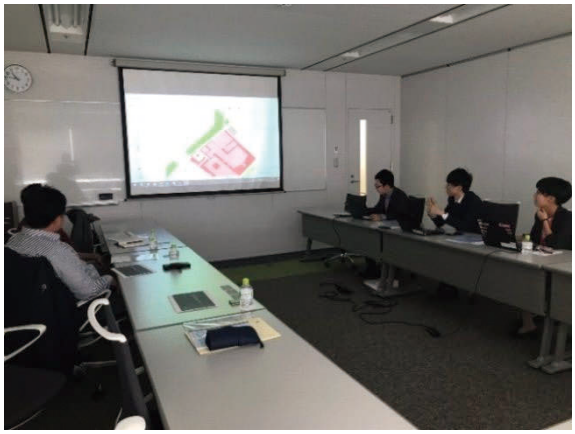


Fig. 4-1-3-1 Learned utilization of mapping data for DRR, Increment P

Fig. 4-1-3-2 TV interview regarding visit for Shimajigawa dam in Yamaguchi Prefecture

(3) Bhutan

- ☐ Mr. Tshering Nima
- ☐ Job Title at the time of visit: District Disaster Management Officer, District Disaster Management Office, Dagana
- ☐ The main aims and objectives of his research is to study and learn on disaster management planning systems and contingency plans in Japan and to understand the better experiences on the response and preparedness level on national, prefectural and local/Municipal levels as well as to learn how disaster management plans were implemented before, during and after disasters occurs compared with Bhutan.

(4) Nepal

- ☐ Mr. Khanal Beda Nidhi
- ☐ Job Title at the time of visit: Chief (Under Secretary), National Emergency Operation Centre, Disaster Preparedness and Response Section, Ministry of Home Affairs
- ☐ Mr. Beda is interested to study the policies taken in disaster risk management by the Japanese Government. The followings are the specific aims of his research to achieve the objectives, (i) to assess laws (policies) on disaster risk management, (ii) to compare and stock-take the laws and their contribution in disaster risk management to provide information regarding policy need for Nepal, and (iii) to understand the linkage between policies and implementation.

(5) Sri Lanka

- ☐ Mr. A.M.R.N.K. Alahakoon
- ☐ Job Title at the time of visit: Assistant Director (District), Disaster Management Center, Ministry of Disaster Management
- ☐ Mr. Alahakoon is interested in "Comparative Study on Preparation of Emergency Response, Recovery Plan and Structural Counter Measures for Flood in Japan and Sri Lanka". He set his aims of this research is as; (i) Study flood emergency and recovery plans in Japan and how to adapt them to Sri Lanka, (ii) Study on immediate and effective emergency response, especially considering gender-equitable and universally accessible approaches, (iii) Study on rehabilitation & reconstruction programs incorporating DRR components, and (iv) Study structural countermeasures for flood hazard in Japan and propose appropriate measures for Sri Lanka.

(6) Thailand

- ☐ Ms. Dejchaisri Suthathip
- ☐ Job Title at the time of visit: Plan and Policy Analyst, Disaster Prevention and Mitigation Policy Division, Department of Disaster Prevention and Mitigation (DDPM)
- ☐ Ms. Suthathip set on her research theme as "Stakeholder and engagement strategy in

disaster risk reduction". Especially she suggested several keywords on her research, (i) emergency response for BBB, (ii) establishment of early warning system, and (iii) design thinking and creativity for innovation.

Fig. 4-1-3-3 Visit to Cabinet Office of Japan

Fig. 4-1-3-4 Developing community hazard map

4-2. Seminars and Training Courses

ADRC has been conducting training courses which are funded by the Japan International Cooperation Agency (JICA) and others. These courses are planed based on characteristics of regions or countries. These courses are basically conducted from 2 weeks to more than one month. It is expected that participants transfer knowledge and experiences which they gained during training courses to their own countries for further promoting disaster risk reduction (DRR) after their returning home.

The training courses that ADRC conducted in FY 2019 are summarized below.

4-2-1. JICA Knowledge Co-Creation Program: "Comprehensive Disaster Risk Reduction for Central Asia and Caucasus"

ADRC conducted a training program for disaster management officials from Central Asia and the Caucasus from 18 June to 26 July 2019, with cooperation of JICA Kansai Center.

The program was designed to convey basic knowledge and experiences related to natural disaster management, and to encourage the disaster management activities that have been conducted in the Central Asia and Caucasus. The area frequently experiences disasters such as floods, droughts, landslides, and earthquakes. Also, heavy snowfall in the winter can lead to flooding when mountain glaciers thaw in the warmer seasons.

The program was conducted in Russian and attended by a total of eight central and local government officials representing five countries: Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan.

During the program, participants were asked to identify a major problem in their own countries and to formulate a sample of the local D R R plan to improve DRR system in each participant's organization to achieve the global targets of the Sendai Framework for DRR (SFDRR).

They attended lectures and visited central and municipal government agencies, research institutes, a meteorological organization, a disaster management base and private companies, in Hyogo Prefecture, Tokyo, Tsukuba, and Niigata, to comprehensively enhance their understanding of Japan's disaster management system.

In Kobe Local Meteorological Office, they have learned about the various facilities for weather forecasting and DRR data management in order to issue the effective warning and advisory.

In addition, they participated in "Town Watching and Community-based DRR Mapping" activities. The field trip was conducted for observing the affected areas of big earthquakes and floods.

It is hoped that the participants will make good use of the knowledge, technologies, and methods they learned from this training program to implement various projects and help strengthen the disaster management systems in their home countries and Central Asia and Caucasus.

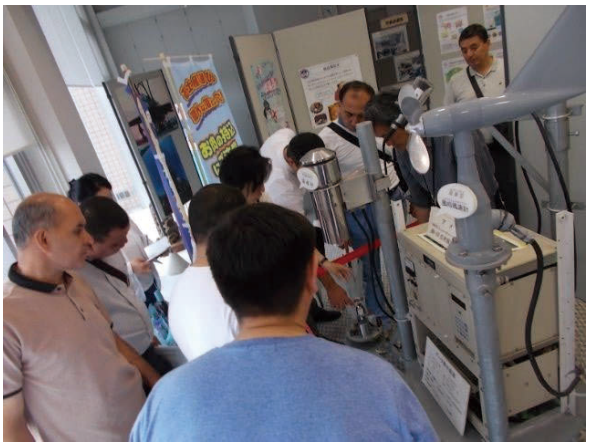


Fig. 4-2-1-1 Kobe Local Meteorological Office

4-2-2. JICA Knowledge Co-Creation Program: "Comprehensive Disaster Risk Reduction for the African Region"

From 24 September to 1 November 2019, ADRC, in collaboration with JICA, conducted a course entitled "JICA Comprehensive Disaster Risk Reduction for the African Region." The training was attended by 14 government officials in charge of disaster risk reduction for seven countries, namely Algeria, Cape Verde, Egypt, Eswatini, Ghana and Malawi.

During this training, participants attended a series of lectures on such topics as the Japanese disaster management system at the central and local levels, Japanese measures against flooding, sediment disasters, and earthquakes, school disaster education, community based disaster risk management, and the role of meteorological observatories. In addition, they participated the ADRC's town watching exercise, in addition to visiting the areas affected by a flooding disaster along the Kinugawa River. The trainees showed great interest in Japanese disaster management systems and efforts at DRR and were keen to learn from every lecture and exercise offered during this training course. It is hoped that the participants will make good use of the knowledge and methods they learned during this course to help strengthen the disaster management systems in their home countries.

Fig. 4-2-2-1 Visit to the flood disaster area along the Kinugawa river

4-2-3. JICA Knowledge Co-Creation Program: "School-based Disaster Education in Turkey"

ADRC conducted a "School-based Disaster Education in Turkey" course from 2 to 13 September 2019 for the first edition and from 20 to 31 January 2020 for the second edition with the cooperation of JICA Kansai International Center. The course was designed to share Japanese knowledge and experiences and to help further enhance the holistic Teacher Training System for School-based Disaster Education in Turkey. The first edition was attended by 14 people and the second one was attended by 20 people, including officials from the Ministry of National Education (MoNE) and school teachers from Turkey.

The training focused on practical approaches to teaching students about disasters and DRR in schools. Participants visited various schools, observed DRR lessons, and talked with teachers at schools including Takasago Elementary School and Hirose Junior High School in Sendai, Yuriage Compulsory Education School in Natori, Nakadai Junior High School in Tokyo, and Maiko High School and Kobe Kindergarten in Kobe. Further, they learned how educational tools and materials, such as card games, practical exercises, and picture stories, can be used in DRR education. In the second edition, the participants also observed and attended the Miyagi Junior Leader Training Program which was organized and designed by Tagajo High School in Takajo for high school students from throughout Japan to jointly learn disaster risk reduction through group work, a poster session, and a seminar. The participants recognized the effectiveness of active and practical learning for DRR.

All the participants, who were selected based on the results of an online training test conducted by MoNE before the JICA course and on their passion for promoting DRR education, were very actively engaged in the training course.

The Deputy Minister of MoNE just happened to be visiting Japan for another purpose at the same time of the second edition, and joined portions of the training program, including the final presentation of action plans proposed by the participants.

It is hoped that all 34 participants will become leaders for promoting school DRR education in Turkey. And also, it is hoped that they will make good use of the knowledge, technologies, and methods they learned from these training courses, and will be able to take advantage of the network of personal contacts they established by participating in the courses.

Fig. 4-2-3-1 Workshop used educational tools for DRR studies DRR drill

4-2-4. JICA Knowledge Co-Creation Program: "Comprehensive Disaster Risk Reduction"

From 8 January to 21 February 2020, ADRC, in collaboration with JICA Kansai International Center, offered a course entitled "JICA Comprehensive Disaster Risk Reduction." The training was attended by seven government officials in charge of DRR for six countries, namely Bangladesh, Brazil, Egypt, India, Myanmar and Nepal.

During this training, participants attended a series of lectures on such topics as the Japanese disaster management system at the central and local levels, Japanese measures against flooding, sediment disasters, and earthquakes, school disaster education, community-based disaster risk management, and role of the meteorological observatories. In addition, they participated in the ADRC's town watching exercise and visited areas affected by a flood disaster in Asakura city, Fukuoka prefecture.

The trainees showed great interest in Japanese disaster management systems and DRR efforts, and were keen to learn from every lecture and exercise offered during the training. It is hoped that the participants will make good use of the knowledge and methods they learned during this course to help strengthen the disaster management systems in their home countries.

Fig. 4-2-4-1 Visit to the flood disaster area of Asakura city

4-2-5. JICA Knowledge Co-Creation Program: "Comprehensive Disaster Risk Reduction for Central and South America"

From 16 June to 3 August 2019, Kobe International Center (KIC), in collaboration with JICA Kansai International Center, conducted the JICA Comprehensive Disaster Risk Reduction for Central and South America Course for 9 countries, namely Bolivia, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico and Nicaragua. The participants consist of national and local government officials in charge of DRR. Those who have vary backgrounds and expertise took part in the 7 weeks training. ADRC joined this course as course leader from the planning to conclusion. This course aimed to enhance basic ability for DRR and to formulate local DRR plans as zero-drafts in their responsibilities

toward elaboration of comprehensive DRR strategies/plans in each organization under specific and unique situations in their respective countries.

This course has approximately 20-years experiences and moderate collaboration with JICA technical cooperation project. Therefore, the course contents are yearly modified according to specialties and concerns of trainees, and feedback of previous training course. The training provides various contents, for instance, the lecture series of Japanese disaster management policy, participation in activities implemented by communities or private sectors, and case studies of past disasters in Japan. Therefore, the participants could comprehensively understand DRR efforts taken all over Japan after this training course. ADRC also conducted field trip for observing some local sites which experienced disasters in the past such as flood, flash flood, volcanic eruption, earthquake, and tsunami, ongoing DRR measures, and museums for public DRR awareness.

In order to formulate local DRR plans, which is the purpose of this course, five-days workshops were held and their local DRR plan presentation was conducted at the end of the training course.

Participants were strongly impressed with DRR efforts taken in Japan and learnt through exchange their perspectives among the participants from various countries. These implications were adapted into their local DRR plan, and ADRC hopes that the participants will utilize the zero-draft of local DRR plans to promote developing a local DRR plan in each municipality. Also it is hoped that they will make good use of what they experienced during this course to develop and strengthen DRR capacity in their home countries.

Fig.4-2-5-1. Visit to local inundation sign beside the Kinugawa river

4-2-6. JICA Knowledge Co-Creation Program: "Promotion of Mainstreaming Disaster Risk Reduction"

ADRC took a role as course leader of the JICA Knowledge Co-Creation Program "Promotion of Mainstreaming Disaster Risk Reduction" conducted by JICE (Japan International Cooperation Center) in collaboration with JICA Kansai International Center from 1 to 14 December 2019. The 2-week training course was attended by national or local

government officials in charge of DRR from 11 countries, namely Bangladesh, Fiji, Indonesia, Mexico, Mongolia Myanmar, Nepal, Pakistan, Philippines, Sri Lanka and Viet Nam. This course aimed to enhance basic capacity for DRR and to formulate local DRR plans as zero-drafts in their responsibilities toward elaboration of comprehensive DRR strategies/plans in each organization considering specific and unique situations in their respective countries.

The course attended by high-level officials who have varied backgrounds and expertise is characterized by the key words: “Innovation” and “High Quality”. Approximately six JICA headquarters staffs were involved in the course not only as lecturers but also as support members. Further, the course contents were modified according to the specialties and concerns of trainees, and based on the feedback of previous training course. For facilitating the participants to comprehensively understand DRR efforts in all over Japan through this training course, it provided a variety of contents. These include the lectures and site visits to explore such topics as Japanese disaster management policy, efforts for DRR mainstreaming, case studies of past disasters in Japan, and water management in Tokyo Metropolitan area.

In order to formulate local DRR plans, which is one of the main purposes of this course, three workshops were conducted by ADRC in collaboration with the university professors and JICA staff members. The local DRR plan presentation formulated by the participants was conducted at the end of the training course.

The participants were strongly impressed with DRR efforts taken in Japan and learnt from exchanging their perspectives with the participants from various countries. These implications were adapted into their local DRR plan, and ADRC hopes that the participants will utilize the zero-draft of local DRR plans to promote developing a local DRR plan in each municipality. Also it is hoped that they will make good use of what they experienced during this course to improve and strengthen DRR capacity in their home countries.

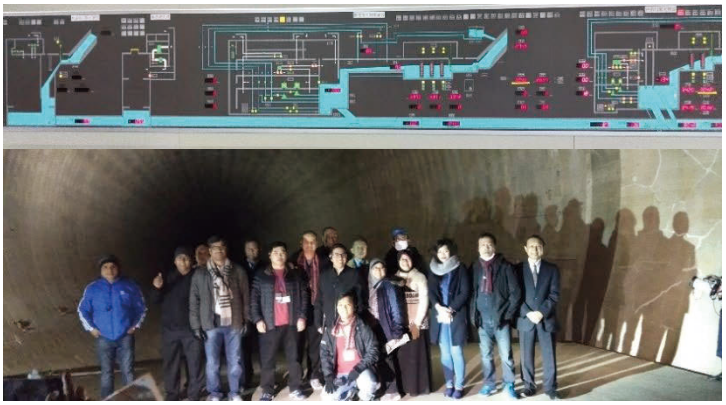


Fig.4-2-6-1. Visit to Underground Regulating Reservoir, Tokyo

4-2-7. Study Tour on School and Community-based Disaster Risk Management for UNICEF Kyrgyzstan

ADRC conducted a study tour on school and community-based disaster risk management for 13 government officials and policy makers of the Kyrgyz Republic in cooperation with

UNICEF Kyrgyzstan. The tour was conducted for one week, from 31 August to 5 September 2019 during “Disaster Preparedness Week” in Japan. It enabled the participants to get to know one another, and to share and learn methodologies and best practices in DRR in Japanese schools and communities.

The participants started their tour with a visit to Sona Area Tokyo, a disaster prevention experience-learning facility, and learned practical knowledge about earthquake disasters and ways to protect themselves. On 1 September, they observed a joint disaster management drill conducted by nine districts in Funabashi City, Chiba Prefecture. First, they visited exhibition booths displaying DRR knowledge and technologies. Next, they observed a drill exercise whose elements included road opening, information collection, search and rescue at many types of affected sites, and medical relief collaboratively conducted by various organizations at the main venue. The participants were impressed by the large scale of the collaborative drill and learned lessons on good coordination practices to ensure effective action.

The participants also visited schools in Yokohama and Kobe to observe DRR education in schools and develop ideas on practical DRR lessons. They were given an overview of the DRR education system in Japan by the Ministry of Education, Culture, Sports, Science and Technology and Hyogo Education Board (MEXT) and learned how Japan enhanced DRR education based on lessons learned from the experiences of past disasters.

It is hoped that the participants will make good use of the knowledge, technologies, and methods they learned from the study tour to effectively implement the “Project for Supporting Safe School Program” in Kyrgyz Republic.

Fig. 4-2-7-1 Observing lessons at Shukugawa Elementary School

4-3. Promoting Cooperation of Short-term Training

ADRC has been promoting a Town-watching program which is one of effective tool to know disaster management in our own town. ADRC organized this program for JICA participants from Serbia and Bosnia-Herzegovina in 18 February 2020. Participants walked around Enoshima-region in Kanagawa Prefecture and found out various countermeasures for DRR in this area.

Fig. 4-3-1 Interviewing residents

Fig. 4-3-2 Developed hazard map and presentation

5. Promoting Cooperation with Member Countries, International Organizations and NGOs

5-1. Technical Cooperation Project in Mongolia

5-1-1. Background of the Project

In 2013, the National Emergency Management Agency (NEMA) of the central government of Mongolia requested the Government of Japan to provide assistance for the technical cooperation project aiming to promote disaster management capacities related to earthquakes in Mongolia. JICA conducted the Data Collection Survey of Disaster Protection and Prevention in Mongolia from February 2016, and collected relevant information. Through the survey, JICA coordinated opinions with the Mongolian government and modified the contents of the request above to the ones focusing on strengthening the capacity of NEMA. Then, in May 2016, the modified request was finally adopted by the Government of Japan. Subsequently, JICA dispatched the Detailed Planning Study Team, and according to the result of the study, JICA and NEMA agreed on the details of the Project named "The Project for Strengthening the National Capacity of Earthquake Disaster Protection and Prevention in Mongolia", and started the project activities from November 2016.

5-1-2. Outline of the Project

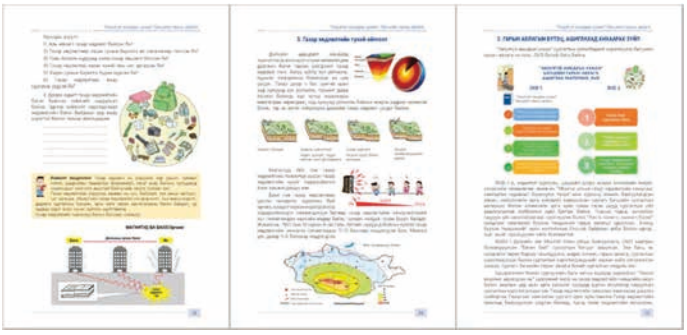
【Project Period】	November 2016 – April 2020 (Total 3.3 years)
【Project Goal】	The capacity of the National Emergency Management Agency will be enhanced through the activities for strengthening the countermeasures for seismic risk.
【Expected Outputs】	Output 1: Capacity for data collection on disaster risk reduction and coordination among related organizations will be enhanced. Output 2: Capacity of public administration officer related to the seismic assessment and seismic strengthening of buildings will be enhanced. Output 3: Implementing a plan on disaster risk reduction education and awareness raising activities will be developed and realized.

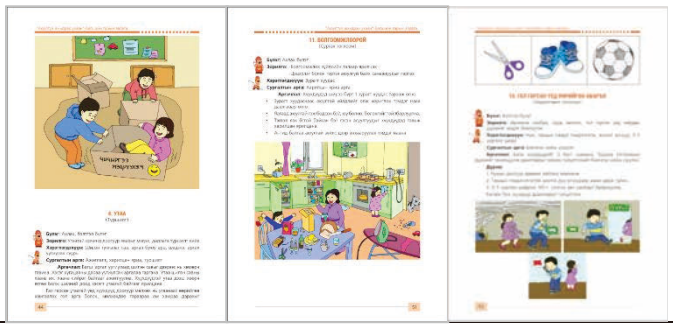
ADRC dispatched the expert for taking the leadership of the overall activities to achieve above mentioned "Output 3" in this project. Also, the following activities related to the School DRR are the main responsibilities of the ADRC;

- Development of guideline for DRR education in pre-school, elementary school, and junior high school,
- Development of educational materials for DRR education in pre-school, primary school, and junior high school,
- Implementation of training program for teacher instructors, and
- Indirect support for implementation of training program for teachers and school staff members

In the fiscal year 2019, which was the last year of the Project activities, the working group

members of the Output 3 completed the development of the guidebooks for "Life-Safety Education Program" with reference DVDs. They were distributed to all the elementary & secondary schools and kindergartens in Mongolia. The contents of them had been designed based on the findings of the pilot activities of the Project and discussion among the working group members and stakeholders through the Project period as shown in the below tables.

Guidebook for Elementary & Secondary Schools	
Preface **Introduction** - Background of "Life-Safety Education Program" - Outline of "Life-Safety Education Program" - Composition and How to Use the Guidebook **Chapter 1**: Understanding of Disasters **Chapter 2**: Lesson Plans for Each Subject (Elementary School)	**Chapter 3**: Lesson Plans for Each Subject (Junior High School) **Chapter 4**: Lesson Plans for Each Subject (High School) **Chapter 5**: Contents and Teaching Methods in the School Activities **Glossary** **References** **Annex: Life-Safety Education Program**
 	

Guidebook for Kindergartens	
Preface **Chapter 1**: Understanding of Disasters and Safety in Kindergartens 1.1 Basic Understanding of Disasters 1.2 Disasters, Hazards, Vulnerabilities, and Risks **Chapter 2**: Reflection of DRR Education in the Kindergarten Education Curriculum	2.1 Relevance of "Core Program" for Pre-Schools and "Life Safety Education Program" 2.2 Daily Education Practices of "Life-Safety Education Program" **Glossary** **References** **Annex: Life-Safety Education Program**
 	

(Source: JICA Project for Strengthening the National Capacity of Earthquake Disaster Protection and Prevention in Mongolia)

5-2. Networking and Participation in International Meetings and Workshops

ADRC places high priority on the development of institutional and human networks to share disaster information in Asia. Developing networks between professionals and their counterparts in member countries, adviser countries, and observer organizations is vital to promoting cooperation on disaster risk reduction efforts in Asia.

In FY 2019, ADRC participated in the following meetings to share information on ADRC's activities, as well as to further enhancing our networks in Asia and DRR community.

5-2-1. Sixth Session of the Global Platform for Disaster Risk Reduction

The Sixth Session of the Global Platform for Disaster Risk Reduction (GP2019) was held at the International Conference Centre Geneva in Geneva, Switzerland on 13-17 May 2019. The Global Platform was recognized by the UN General Assembly Resolution and held bi-annually since 2007 to provide a venue for professionals working on DRR from many different stakeholder groups to get together. The groups represented at this year's event included national governments, international organizations, regional organizations, academic institutes, civil society, and the private sector. This sixth meeting was co-hosted by the government of Switzerland as well as UNDRR, and was attended by representatives from 182 countries.

(1) Official Statement

On 17 May, Mr. Suzuki, Executive Director of ADRC, gave an opening statement on ADRC's future plans. He noted that natural hazards in ASEAN countries have been increasing in recent years, and that ADRC has started to study business continuity planning (BCP) and business continuity management (BCM) as DRR investments specifically for the ASEAN region. Mr. Suzuki, Executive Director, as well as Ms. Shiomi and Mr. Ikeda represented ADRC.

Fig. 5-2-1-1 Official Statement by Mr. Suzuki

(2) Meetings with Member Countries

ADRC had several meetings with some counterpart organizations participated in GP2019 to discuss future cooperation and specific activities. For example, meetings were held with the Committee of Emergency Situations and Civil Defense of Tajikistan to discuss early-warning platforms using space technologies; with the National Disaster Management Authority in the Maldives to discuss capacity-building programs for GIS and remote sensing technologies; with the delegation from Kyrgyz to talk about a disaster education program to be conducted in Japan in 2019; with the Disaster and Emergency Management Presidency (AFAD) in Turkey to discuss a future relationship; and finally, with MES-Armenia to share ideas about a program in earthquake engineering which is being planned in Yerevan city.

Fig. 5-2-1-2 Discussion with delegation from Tajikistan

(3) GLIDE Stakeholder Meeting

On 14 May, ADRC organized a GLobal unique IDEntifier number (GLIDE) stakeholder meeting on the sidelines of GP2019. The meeting was attended by 15 participants from 6 GLIDE stakeholders, who discussed the present situation and the future innovation of GLIDE system (For more information, please see Chapter 2-2).

5-2-2. Typhoon Committee

(1) 14th Annual Meeting of the Working Group on Disaster Risk Reduction on "Disseminating and Sharing Data on Disaster Risk Reduction"

ADRC participated in the 14th annual meeting of the Working Group on Disaster Risk Reduction on "Disseminating and Sharing Data on Disaster Risk Reduction" was organized by United Nations Economic and Social Commission for Asia-Pacific (UNESCAP)/World Meteorological Organization (WMO) Typhoon Committee (TC) and the National Disaster Management Research Institute (NDMI) in Ulsan, Republic of Korea from 18 to 21 June 2019.

The main objective of the meeting was to share the information of members' typhoon-related technologies and policies. Some 30 participants from member countries and

relevant organizations, including ADRC reported on their recent technologies and policies as well as updates on WMO and NDMI's DRR information system tools.

ADRC gave a presentation on the typhoons that struck Japan in 2018.

Fig.5-2-2-1 Group photo

(2) 14th Integrated Workshop

ADRC participated in the 14th UNESCAP/WMO Typhoon Committee (TC) Integrated Workshop in Guam, U.S.A., on 4-7 November 2019. Under the main theme entitled "Smart Service for Typhoon Disaster Prevention," a general meeting was held on the first day. On the second day, the UNESCAP/WMO Typhoon Committee and the National Disaster Management Research Institute of Korea (NDMI) co-hosted a Disaster Prevention Working Group (WGDRR), and on the third day exchanged views on the working groups' reports and future directions.

Participants of the WGDRR are Hong Kong, Japan, Lao PDR, Malaysia, Republic of Korea, the U.S.A. and Viet Nam. In the WGDRR, each country made presentations on disasters and DRR measures. In this report, ADRC introduced trends in the frequency and scale of typhoons in Japan, as well as the topic of the typhoon Hagibis (No. 19), which had the greatest damage in Japan. In addition, ADRC introduced "Development of Local DRR Plan with 8 STEPs," which supports to make local disaster prevention plans in each country through JICA training courses and other activities, and also introduced an integrated DRR information system application model that is effective for information sharing in the event of a disaster. Following presentations from each country, evaluations were made for the 2019 projects, including a technical session at the World BOSAI Forum to be held in Sendai after the Integrated Workshop. For the 2019 project, it was reported that an early warning system was constructed by installing rain gauges and water level gauges in Viet Nam and Lao PDR, and video teaching materials for storm surge disaster awareness raising were reported. Furthermore, in addition to the continuous development of educational materials on disaster prevention awareness as a 2020 project, a human resources development program in the field of disaster prevention and a weather system seminar using cloud sources were proposed. Finally, a change of Chair and Vice Chair was proposed.

Fig. 5-2-2-2 WGDRR Group photo

At the plenary session of final day, reports and budget proposals from each WG and training for human resource development, and proposal for Cross Cutting Project was made. These were agreed to be submitted to the 52nd Annual Meeting.

Fig.5-2-2-3 Group photo

5-2-3. Northeast Asia Forum on Capacity Development of Technology for Disaster Risk Reduction

It has been discussed the effective ways to utilize and share technology for disaster risk reduction (DRR) among China, Japan and Republic of Korea. In recent year, experts from there countries have been discussing how to transfer these technology to other Asian countries.

One of the major deliverables and achievements in the context of trilateral cooperation for disaster risk reduction will be the publication of "Trilateral Best Practices - Application of Technology for Reducing Disaster Risk". Three countries will collect the best practices and UNDRR in Incheon, Republic of Korea will edit them. The publication will be open to the public in 2020.

ADRC has collected and submitted the following science and technologies for DRR. Most of them are affordable and easy to be applied in the developing countries for enhancing their disaster resilience.

1) Gabion, traditional civil engineering tool scientifically enhanced by advanced earthquake engineering with shaking table.

2) Emergency damage assessment methodology with data on epicenter location and magnitude, underground information and earthquake resilience characteristic of the buildings

3) New visualizing technology for easy-to-understand GIS information

4) Data collection technology with smart phones when ITC infrastructure is not available

5) Affordable retrofitting technology with polymer

ADRC also participated in the following meetings to further exchange and seek the cooperation among these three countries.

(1) Public Forum on "Trilateral Disaster Risk Reduction and Relief Cooperation among China-Japan-Korea"

ADRC participated in a public forum on "Trilateral Disaster Risk Reduction and Relief Cooperation among China-Japan-Korea," which was organized by the Trilateral Cooperation Secretariat on 19 June 2019 in Seoul, Republic of Korea. Participants attended the public forum from disaster management organizations and research institutions in all three countries. ADRC presented information on Town Watching Programs and Sentinel Asia in a session on international disaster risk reduction. In this session, ADRC proposed that information on the status of hazard map development be shared among the three countries. ADRC also gave a presentation on disaster relief on behalf of a Japanese NPO that was unable to participate due to emergency response efforts needed following the Niigata Earthquake that struck the night before their planned presentation. In that session, ADRC reported on volunteer activities in Japan.

Fig. 5-2-3-1 Public Forum

(2) A forum of Trilateral Cooperation on Disaster Management between China-Japan-Korea, "Northeast Asia Forum on Capacity Development of

Technology for Disaster Risk Reduction"

ADRC participated in a forum on “Northeast Asia Forum on Capacity Development of Technology for Disaster Risk Reduction (DRR)" which was organized by the Trilateral Cooperation Secretariat and the UNDRR on 16-17 December 2019 in Incheon, Republic of Korea. Participants attended the public forum from disaster management organizations and research institutions in all three countries. ADRC and the Geoinformatics Center of Asian Institute of Technology presented information on Visiting Researcher Programme, Town-Watching Programs and Sentinel Asia in a session on international disaster risk reduction. In this session, ADRC proposed that information on the status of hazard map development be shared among the three countries and suggested to collaborate between China-Japan-Korea for DRR in the Asian countries.

Fig. 5-2-3-2 Forum

5-2-4. APEC

(1) Meetings in Chile

On 20-22 August 2019 ADRC participated in the 13th APEC Senior Disaster Management Officials Forum (SDMOF) and the 15th Emergency Preparedness Working Group (EPWG) meetings at Cabana Hotel in Puerto Varas, Chile. The meetings were attended by some 40 participants from 15 out of 21 APEC economies and relevant organizations.

On the first day the 13th SDMOF started with opening remarks by Mr. Ricardo Toro, National Director of the National Emergency Office (ONEMI), Chile. In the following two sessions, recent practices and initiatives for DRR for resilience were presented by representatives from Australia, Chile, China, Malaysia, New Zealand, U.S.A., WB, Pacifico (business entity) and Doshisha University. ADRC Executive Director Mr. Suzuki presented on Sentinel Asia and early warning system using Quasi-Zenith Satellite System (QZSS).

The second day of the 15th EPWG meeting was organized. After the opening remarks by ONEMI National Director Mr. Ricardo Toro, EPWG Co-chair Mr. Li Wei-Sen briefed on the history and present situation of SDMOF and EPWG. Then Chinese Taipei, Chile and Malaysia reported their ongoing EPWG projects in 2019 while Peru, Malaysia and Australia reported

recent disasters.

In the morning of the final day, Chile organized a workshop on telecommunications utilization during emergencies as a project in EPWG. China, Chile, Chinese Taipei, Malaysia, New Zealand and Peru shared their practices of ICT and telecommunications in DRR. Some participants referred to information by Mr. Suzuki on the first day.

In the afternoon, the participants of the meetings joined a field study program. After taking a lecture on the volcanos and monitoring system in the area, they visited nearby Volcán Osorno Monitoring Station.

Fig.5-2-4-1　Group photo

(2) Meeting in Malaysia

ADRC Executive Director took up an appointment as the co-chair of EPWG/APEC in January 2020. He participated in the Senior Officials' Meeting (SOM) Steering Committee on ECOTECH-Committee of the Whole Meeting (SCE-COW), the informal meeting of SCE-COW and Multi-Stakeholder Dialogue on Post 2020 Vision from 17 to 19 February 2020 in Putrajaya, Malaysia.

Fig. 5-2-4-2 SOM Steering Committee on ECOTECH-Committee of the Whole Meeting (SCE-COW)

In the SCE-COW, APEC Economies were briefed by chairs and co-chairs of working

groups in ECOTECH Committee on their Work Plans in 2020 and suggested their comments and questions.

The meeting on 17 February was the informal meeting on SCE-COW and the chairs, the co-chairs and APEC Secretariat participated in it and shared their Work Plans in 2020, which could facilitate collaboration among the fora.

In SCE-COW formal meeting on 18 February, APEC economies participated in it and expressed their suggestions and raised questions to each of the Work Plans 2020. Thai delegation expressed its expectation on collaboration with EPWG and Health Working Group (HWG) for managing coronavirus incident.

5-2-5. Expert Group Meeting to Combat Sand and Dust Storm, UNESCAP

ADRC participated in the Expert Group Meeting on Sand and Dust Storms, which was organized on 27-28 August 2019 at the United Nations Conference Center in Bangkok, Thailand. Sand and dust storms (SDS) have received priority attention by UNESCAP and pose a formidable challenge to achieving the Sustainable Development Goals and targets adopted as part of the 2030 Agenda for Sustainable Development. Several ADRC member countries in Central and South Asia have suffered from their impacts. It is important to recognize that climate change will have big impacts on SDS in terms of their area, frequency, and magnitude. ADRC gave a presentation on satellite remote sensing technologies for monitoring SDS and explained its interests in medium- and long-term SDS impact assessment simulations that take into account the impacts of climate change.

5-2-6. Asia-Pacific Partnership for Disaster Risk Reduction Forum

On 12-13 November 2019, the Asia-Pacific Partnership for Disaster Risk Reduction (APP-DRR) Forum was organized at Brisbane Convention and Exhibition Center in Brisbane, Australia. APP-DRR is a regional DRR platform, former ISDR Asia Partnership (IAP) Forum, which was expanded to the Asia-Pacific region.

Fig. 5-2-6-1 Topics of APMCDRR2020

This Forum was hosted by UNDRR and the Government of Australia, attended by more than 100 stakeholders from the Governments, the UN agencies, international and regional organizations, research institutions and NGOs in the Asia Pacific region. It aimed to review the progress of Sendai Framework for Disaster Risk Reduction (SFDRR) in the Asia Pacific region, resulting in inputs to the Asia Pacific Ministerial Conference on Disaster Risk Reduction (APMCDRR) 2020, scheduled in Brisbane, Australia, in June 2020.

The Forum started with opening and welcome remarks by Ms. Loretta Hieber Girardet, Chief, UNDRR Regional Office for Asia Pacific, and Mr. Paul Kelly, Assistant Secretary, Humanitarian Response, Risk & Recovery Branch, Department of Foreign Affairs and Trade, Australia. Then Ms. Loretta Hieber Girardet reported on the implementation situations of SFDRR and SDGs in the region. According to her presentation, the overall trends show the decrease in morality due to natural disasters while increase economic damages. In 2019 alone, natural disasters in the region were characterized by increased intensity, lasting longer and unpredictability. She emphasized the importance of accelerating momentum on climate action, national and local DRR strategies, investment in infrastructure and big data innovations at the regional level.

Then Panel Discussion "Accelerating disaster risk reduction in Asia-Pacific" followed with three panelists, Hon. Saber Chowdhury, Member of Parliament of Bangladesh, Mr. Zarak Khan, Director, Programmes and Initiatives, Pacific Islands Forum Secretariat, and Ms. Charlote Benson, Principal DRM Specialist, Sustainable Development and Climate Change Department, Asian Development Bank. They presented and discussed on their activities.

The next sessions were intended to result in inputs for APMCDRR2020, titled "Making a Change: Accelerating the transformation to risk-informed development". The pillars of APMCDRR2020 became the topics of the presentation on day one and then group discussion by each topic on day two. The topics were (1) investing in prevention, (2) making systems and infrastructure resilient, (3) sharing innovations and solutions and cross-cutting issues of (4) inclusiveness, (5) local action and (6) island, coastal and remote communities. Joining the group (3), ADRC introduced about its activities such as GLIDE and Sentinel Asia.

Lastly, each group shared the outcomes of the discussion among all participants. UNDRR and the Government of Australia briefed on APMCDRR2020. Despite the limited time, the forum turned out an opportunity to share activities and challenges for implementing SFDRR in the Asia Pacific region.

Fig. 5-2-6-2 Group photo at APP-DRR

5-2-7. ASEAN High-Level Symposium on Disaster Management 2020

On 26-27 February 2020, ADRC participated in ASEAN High-Level Symposium on Disaster Management 2020 held at ASEAN Secretariat in Jakarta, Indonesia. The symposium was organized by ASEAN Secretariat and funded by China with the objective of providing a platform for discussions on disaster management in a cooperative framework by involving relevant experts from various background by complementing the existing ASEAN mechanisms. More than 100 participants from DRR and other fields like social and financial sectors attended from ASEAN member countries, academic institutions, international organizations and NGOs.

The symposium constituted of opening session and six thematic sessions.

The opening session started with remarks by ASEAN Secretariat-General H.E. Mr. Dato Lim Jock Hoi. He thanked the Republic of China for hosting this Symposium. Then Ambassador/ Representative of the Mission of the People's Republic of China to ASEAN, H.E. Mr. Deng Xijun made a speech, hoping the symposium will gain input for and the ASEAN Ministerial Meeting on Disaster Management (AMMDM) scheduled this year. The Chairman of the AMMDM, Under-Secretary Ricardo Jalad, Office of Civil Defense, Philippines made a keynote presentation. Introducing several DRR initiatives in ASEAN framework, he stressed the need to further promote coordination among stakeholders.

Thematic Session I was titled "Understanding the likelihood of prevalent risks, political dynamics of hazard and disaster policymaking in South-East Asia." Panelists were Dr. Amod Mani Dixit, ADRRN/NSET, Dr. Phillip J. Vermonte, Center for Strategic and International Studies (CSIS), Dr. YOSHINO Naoyuki, Asian Development Bank Institute, and MR. Hans Guttman, ADPC. They discussed the recent increase in climate disasters in ASEAN region and pointed to the need for political commitment to scale up SDGs and SFDRR efforts.

Session II on "Early Warning System and Effective Disaster Response Operations through Advanced Technology and Innovations" were presented by DC Teong How Hwa, Singapore Civil Defence Force (SCDF), Singapore, Mr. Kosta Antonopoulus, Medicine Sans Frontiers, Mr. An Pich Hatda, Mekong River Commissions (MRC) Secretariat, Ms. Amy Martin, ROAP, UNOCHA, Mr. Zhang Xiaoning, National Disaster Reduction Center of China (NDRCC) and Ms. Christa Rader, WFP Indonesia. They respectively introduced their activities in relation to early warning (EW) system and relevant technologies.

Session III, "Strengthening Community Resilience and Multistakeholders Partnerships" had panelists including Dr. Rahmawati Ama Husein, BNPB, Indonesia, Dr. Jeremy Wellard, International Council of Voluntary Agencies (ICVA), Dr, SAKURAI Aiko, Tohoku University, Ms. Ewa Wojkowska, Kopernik, and Ms. Tiziana Bonapace, UNESCAP. They overviewed their recent and ongoing programs in cooperative projects with multipartners.

Session IV featured "Advancing Disaster Risk Financing and Insurance to Enhance Regional Economic Resilience". Panels, Ms. Taheeni Thammannagoda, ECHO, Ms, Suprayoga Hadi, BAPPENAS, Indoensia, Ms. Elean Hadi, Monetary Authority of Singapore

and Mr. Butch Meily, Philippine Disaster Resilience Foundations. They briefed on various financial schemes and services they are promoting for disaster resilience.

Session V on Sufficient Recovery Plan, Rehabilitation and Build Back Better Strategy" was presented by the panelists, Ir. Rifai, M.B.A., BNPB, Indonesia, Bs, Sophie Kemikhadze, UNDP Indonesia, Mr. Heru Prasetyo, Executing Agency for Reconstruction and Rehabilitation Aceh & Nias, Mr. Jan Gelfand IFRC and Mr. Jamshed Kazi, UN WOMEN. They reported on mainly cases in Indonesia and shared good practices and challenges in recovery operation and management.

Session VI was about "Bridging Global and Regional Partnership on Disaster Management" presented by Mr. Faisal Djalal, Asia Pacific Alliance for Disaster Management, Dr. Riyanti Djalante, UNU, Ms. Adelina Kamal, ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management (AHA Centre), and Mr. Muamar Vebry, European Union. They introduced their activities at global and regional levels, stressing the importance of coordination and collaboration.

At the end of Session V, ADRC made comments on disaster data development and methodologies in ASEAN countries as many panelists regarded accuracy and coverage of disaster data as challenging regardless of disaster phase or activity field throughout the symposium. Then application of GLIDE to their work was suggested for future solution.

Fig. 5-2-7-1 Opening Session

6. International Recovery Platform (IRP): History and Current Activities

6-1. The Establishment of IRP

While the capacity of the UN system for disaster response and humanitarian assistance are widely recognized, there is currently a vacuum in terms of the UN's capacity and system-wide mechanisms for post-disaster recovery efforts, particularly those with a risk reduction focus.

Experience increasingly affirms that the post-disaster recovery phase provides a critical opportunity to shift the focus from saving lives to restoring livelihoods, and is an important time for introducing measures to reduce future disaster risk. Effective recovery can help close the gap between relief and development, and can transform disasters into opportunities for sustainable development. This occurs when efforts are made to support local and national recovery processes at an early stage, when risk reduction considerations are factored into all recovery activities, and when the synergies between development, humanitarian, and other actors involved in the response phases are properly channeled. A successful recovery effort, then, is predicated on having advance agreements and mechanisms in place so that the recovery process is effectively conceived and managed, and is initiated in a timely manner. This includes such measures as appropriate assessment methodologies, pre-established resource mobilization mechanisms, surge capacity to support UN Country Teams, and standing coordination mechanisms.

Shared concerns related to the UN approach and processes for post-disaster recovery have resulted in the formulation of a joint initiative, the International Recovery Platform (IRP), by the UN system, ADRC, and other partners, with the encouragement and support of Japan as well as other donors and key program countries. This initiative was discussed at the 2005 UN World Conference on Disaster Reduction (WCDR) during session 4.9 on Post Disaster Recovery. Representatives from the ADRC, UNDP, UN-HABITAT, ILO, and other concerned UN agencies expressed their respective agency commitments and support for the proposed international platform for recovery. The meeting resulted in a recommendation for the establishment of the IRP.

In four months after the WCDR, the International Seminar on Post Disaster Recovery, in support of IRP, was held at Hyogo House on 11-13 May 2005. IRP was officially established in Kobe, Japan.

6-2. The Governance Structure of IRP

IRP consists of 17 governments, UN agencies, and international organizations including ADRC (as of March 31 2020).* IRP focuses on the following three priority activities for recovery: (a) Knowledge Management and Advocacy, (b) Training and Capacity Building and (c) Enhancing Recovery Operations.

As described in IRP Strategic Framework 2015-2020, IRP Secretariat is located in Kobe and

responsible for convening IRP Steering Committee meetings and disseminating information on IRP activities and knowledge products.

* IRP members: Asian Development Bank (ADB), ADRC, Cabinet Office of Japan, Centro de Coordinación para la Prevención de los Desastres Naturales en América Central (CEPREDENAC), Hyogo Prefectural Government, International Labour Organization (ILO), Ministry of Foreign Affairs of Italy, Swiss Agency for Development and Coordination (SDC), the World Bank, United Nations Centre for Regional Development (UNCRD), United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), United Nations Educational, Scientific and Cultural Organization (UNESCO) ,United Nations Human Settlements Programme (UN-HABITAT), United Nations Office for Disaster Risk Reduction (UNDRR), United Nations Office for Project Services (UNOPS), World Health Organization (WHO).

6-3. IRP Activities in FY 2019

6-3-1. International Recovery Forum 2020

Introduction

International Recovery Forum 2020 ~Building Back Better through Resilient Infrastructure~ was held on 28th January, at Hotel Okura Kobe. 172 participants from 24 countries and 23 organizations attended the forum.

The International Recovery Forum 2020 drew upon the insights and experiences of governments, private sector, and international organizations to discuss common and emerging challenges and solutions for infrastructure recovery. The Forum featured distinguished keynote speakers and two panel discussions. The first panel focused on preparedness for infrastructure recovery, and harnessing the opportunity to invest in resilient infrastructure before disaster strikes. The second panel explored past and ongoing recovery initiatives to build resilient infrastructure to withstand future disasters.

Opening Remarks

Mr. Jared MERCADANTE, Chair, IRP Steering Committee and Disaster Risk Management Specialist, Global Facility for Disaster Reduction and Recovery (GRDRR) at the World Bank opened the forum, followed by Welcome Remarks from Mr. KANAZAWA Kazuo, Vice Governor, Hyogo Prefectural Government and Mr. MURATE Satoshi, Assistant Vice-Minister for Disaster Management, Cabinet Office, Government of Japan.

Keynote Session

The main substantive sessions opened with a keynote session featuring two presentations.

Mr. MUROSAKI Yoshiteru, Dean, Graduate School of Disaster Resilience and Governance, University of Hyogo gave a presentation entitled "Recovery of Livelihood and Infrastructure ~Lessons of the Great Hanshin-Awaji Earthquake". He noted that the Great Hanshin-Awaji Earthquake has completely changed the way people think about recovery in Japan, and there has been a significant shift from the conventional idea of restoring the original state and reconstructing buildings to the idea of creating a new society called "creative reconstruction", which is common to the idea of Build Back Better advocated in the Sendai Framework for Disaster Risk Reduction. He also mentioned that if we fail to consider the soft infrastructure and human infrastructure as well as hard infrastructure more comprehensively, we cannot achieve recovery in the true sense of the word and I think that is what "resilient infrastructure" is all about.

Mr. Kamal KISHORE, Member, National Disaster Management Authority, Government of India gave a presentation entitled "Making Infrastructure Disaster Resilient Opportunities and Challenges." He noted that to actually work towards making our infrastructure more resilient, we have to take a territorial and regional planning approach, and look at interconnections between infrastructures and look at infrastructure as ecological infrastructure. He also mentioned that since at least five of the Sustainable Development Goals (SDGs) speak directly to infrastructure development, if we do not do a good job of resilient infrastructure, we will not be able to achieve these SDGs.

Panel Discussion 1

The theme of panel discussion 1 was Enabling Recovery Readiness with Resilient Infrastructure.

Mr. Jared MERCADANTE, Disaster Risk Management Specialist, GRDRR, at the World Bank Group moderated the discussion.

Panelists included Ms. Camille CRAIN, Section Chief, Building Resilient Infrastructure and Communities (BRIC), Federal Emergency Management Agency, Government of the USA; Mr. TAKAISHI Masaya, Counsellor, National Resilience Promotion Office, Cabinet Secretariat, Government of Japan; Mr. Brendan MOON, Chief Executive Officer, Queensland Reconstruction Authority, Government of Queensland, Australia and Mr. TADA Shinya, Director, Technology Planning Division, Policy Planning & Coordination Bureau, Public Works & Development Department, Hyogo Prefectural Government.

Ms. Camille CRAIN noted that one thing that makes Building Resilient Infrastructure and Communities (BRIC) program different is FEMA has two different programs that fund mitigation or resiliency projects in a post-disaster setting.

Mr. TAKAISHI Masaya noted that the Great East Japan Earthquake served as a major turning-point to institutionalize the concept of building national resilience, including soft infrastructure, so in order to prevent the recurrence of such a catastrophic disaster, it is important to prepare for the worst case during normal times, before disaster strikes.

Mr. Brendan MOON noted that since we already have the tools to make our infrastructure fit-for-need in light of current and future climate risk, the current challenge is about getting greater alignment in terms of our policy, funding, and decision-making to ensure that we have an integrated and systematic approach to "Building Back Better."

Mr. TADA Shinya noted that preparing for Nankai Trough earthquake, Hyogo prefectural government has formulated a 10-year infrastructure development plan for tsunami risk reduction (2013–2023), and systematically promoting measures against tsunamis by strengthening and preventing subsidence of tide embankments.

Panel Discussion 2

The theme of panel discussion 2 was Resilient Infrastructure Recovery and Building Back Better.

Mr. Krishna VATSA, Recovery Advisor, Crisis Bureau, United Nations Development Programme (UNDP), Kenya moderated the discussion.

Panelists included Ms. Nadia ADRIÃO, Senior Coordinator, Post-Cyclone Reconstruction Cabinet (GREPOC), Government of Mozambique, Mr. OCHI Kengo, Counsellor, Construction of Infrastructure Section, Reconstruction Agency, Government of Japan, Mr. Abdul Malik SADAT IDRIS, Director, Institutional for Water Resource Infrastructure, National Development Planning Ministry (BAPPENAS), Government of Indonesia, Mr. Davut ŞAHIN, Group Leader, Department of Recovery, Disaster and Emergency Management Presidency (AFAD), Government of Turkey and Mr. KAWASE Nobuyuki, Managing Executive Officer and General Manager, Osaka Main Office, Toyo Construction Co, Ltd.

Mr. Kamal KISHORE, Member, National Disaster Management Authority, Government of India acted as Commentator:

Ms. Nadia ADRIÃO noted that in terms of recovery and reconstruction needs for Cyclone Idai and Cyclone Kenneth , the total is 3.2 billion dollars, we got about 1.4 billion dollars. But the persisting gap is about 1.8 billion dollars.

Mr. OCHI Kengo noted that about nine years have passed since promoting recovery projects following the Great East Japan Earthquake, it has become structurally safe, but we are facing the serious issue of building a resilient community including non-structural aspects.

Mr. Abdul Malik SADAT IDRIS noted that following the 7.7M earthquake and tsunami that struck Central Sulawesi, Government of Indonesia chose to work with existing mechanisms in delivering the recovery program, and in doing that, Government of Indonesia coordinated different players and assigned responsibilities.

Mr. Davut ŞAHIN noted that in accordance to lessons learned Duzce Flood, stream beds was expanded to be able to avoid new flood, we changed route of some roads, and some of road crossing constructions with better quality and made new ones for some routes, reconstruct some of them by using new techniques and considering new regulation.

Mr. KAWASE Nobuyuki noted that the basic policy of restoration of Kobe port from the Great Hanshin-Awaji Earthquake was to strengthen the seismic resistance through diverse

types of structures, and as the priorities of full-scale restoration were clarified, we could complete the project by the deadline under the given construction conditions.

Wrap up and Closing Remarks

Ms. ISHIGAKI Kazuko, Co-Chair, IRP Steering Committee and Director for Public and International Relations, Disaster Management Bureau, Cabinet Office, Government of Japan closed the Forum.

Fig.6-3-1-1. International Recovery Forum 2020

6-3-2. IRP/ADRC Engagements at the at the World Reconstruction Conference 4 and the Global Platform for Disaster Risk Reduction 2019

The sixth session of the Global Platform for Disaster Risk Reduction (GP2019) and the fourth World Reconstruction Conference (WRC4) were held in conjunction with one another in Geneva, Switzerland, the week of 13-17 May 2019. The events were organized by UNDRR (GP2019), and World Bank/GFDRR, UNDP, UNDRR and the European Commission (WRC4), with conference themes focused on the "Resilience Dividend: Towards Sustainable and Inclusive Societies" and "Inclusion for Resilient Recovery", respectively. They offered a unique, full-week opportunity for the IRP/ADRC and participants to dive deeply into progress and challenges in inclusive recovery. The IRP Secretariat, IRP Steering Committee Members and Observers were well-represented at the conferences, contributing across the agendas and to the outcomes of these significant events, as both conveners and speakers. IRP held a successful Side Event at the Global Platform, thanks to the support of its SC Members and Observers. IRP also convened the 25th Meeting of the IRP Steering Committee.

IRP/ADRC Side Event at GP2019: Securing an Inclusive Build Back Better Dividend

Disadvantaged, vulnerable people are frequently disproportionately impacted by disasters, and often with poor access to recovery resources and technical assistance. They are too often unable to benefit from efforts to build back better. The IRP/ADRC-organized side event at the

Global Platform, “Securing an Inclusive Build Back Better Dividend” convened an expert panel composed of representatives of national governments, civil society, and academia to address lessons learnt from diverse recovery experiences in working to secure more equitable recovery outcomes**.**

Mr. HAYASHI Haruo, President of the National Research Institute for Earth Science and Disaster Resilience, opened the session by introducing the vision for building back better developed for the 1995 Great Hanshin-Awaji Earthquake in Japan. He focused his remarks on evidence and lessons learnt on achieving ‘life recovery’ inclusively, which can be applied to contemporary recovery efforts. Mr. Kamal Kishore, Member, National Disaster Management Authority, India, spoke of the need for nimble institutional arrangements that can enable more holistic, integrated approaches to recovery, and can efficiently coordinate between agencies. Mr. Kishore proposed that recovery cannot be ‘better‘ if it is not inclusive, and recommended that recovery planners should consider people and communities themselves as assets and contributors to recovery planning and implementation.

Mr. Mark Osler, Senior Advisor for Coastal Inundation and Resilience for the U.S. National Oceanic and Atmospheric Administration, presented inclusive approaches to drive the translation of science into decision-making support. He noted that including communities in knowledge translation gives agency to disadvantaged communities, leverages local wisdom and experiences, and yields better risk information. Mr. Sushil Gyawali, Chief Executive Officer, National Reconstruction Authority, Nepal, shared evidence of the benefits of inclusive recovery in Nepal and the key initiatives that catalyzed better, more equitable outcomes. Ms. Emily Wilkinson, Senior Research Fellow, Overseas Development Institute, introduced the Caribbean Knowledge Network on Resilience and Recovery, a new community of practice taking a collaborative approach. It brings representative stakeholders together to learn from recovery experiences and plan for future recovery scenarios. Mr. Juan Caballero, Director of Programmes and Partnerships for Latin America, Build Change, shared innovative practices in inclusive housing reconstruction through owner and inhabitant-driven approaches. Mr. INOMATA Tadanori, Advisor, Office for Global Relations, Nagasaki University, shared a ‘village-academia collaboration model’, in which academic faculty members, posted to affected villages, improve risk communication and promote inclusive recovery programmes.

Fig. 6-3-2-1　Side Event

"Build Back Better and WRC4 Outcomes" Working Session at the Global Platform

UNDRR organized and coordinated this working session with contributions from IRP/ADRC, and sought to learn from good practices, new evidence, and experiences of success and failure in recovery, in order to support inclusive recovery planning and deliver better, more equitable recovery outcomes. The session opened by reflecting back on the outcomes of the fourth World Reconstruction Conference, the theme of which had focused on "Inclusion for Resilient Recovery", providing an opportunity to build on its success and delve more deeply into key issues. The panelists shared and discussed inclusive approaches, and the ways in which they improve recovery planning, implementation, and outcomes. The panel argued for people-centered, demand-driven approaches to recovery. They discussed addressing pre-disaster social disadvantages and vulnerabilities that can constrain recovery, and limit opportunities to build back better. The panel advocated for investing in capacities to build back better, such as strengthening institutional capacities for inclusion and intersectoral collaboration, as well as local capacities for planning, resourcing, implementation, and technical support. The panel discussed how countries and communities learn from recovery experiences at home and abroad, and how learning can be institutionalized. Ms. OKAI Asako, Assistant Secretary General and Director for Crisis Bureau of UNDP, moderated the session with panelists from the Government of Haiti, the Government of Indonesia, the World Bank, International Federation of Red Cross and Red Crescent Societies (IFRC), and the Japan International Cooperation Agency (JICA).

Fig. 6-3-2-2 Working Session

"Community-led Recovery" Thematic Session at the World Reconstruction Conference 4

The thematic session on Community-led Recovery at the WRC4 considered the leading role of communities as a key mechanism for achieving a more inclusive recovery and better overall recovery outcomes. The IRP Secretariat was invited to join a panel discussion, along with key representatives from JICA and Habitat for Humanity, and moderated by IRP SC Member GFDRR. The IRP Secretariat shared lessons gleaned from community-led recovery efforts, underscoring the complexity of the community-led recovery process, as well as important challenges and considerations in mobilizing communities and managing community-level

recovery programs. The IRP Secretariat also shared good practices that have emerged from a range of global community-led recovery efforts, including examples from the 2001 Gujarat Earthquake and the 1995 Great Hanshin-Awaji Earthquake. The session outcomes were taken up by the WRC4 Joint Communique outcome document, including prioritizing community participation in recovery with access to information, decision-making opportunities, and engagement of community-led organizations.

"Fostering Social Inclusion through Culture in City Reconstruction" Thematic Session at the World Reconstruction Conference 4

The IRP Steering Committee Chair, Mr. Josef Leitmann, GFDRR, and Co-Chair, Ms. SAYA Setsuko, the Cabinet Office Japan, led this session. Serving as moderator, Mr. Leitmann stressed that culture can be a powerful building block for social inclusion, risk mitigation, and recovery preparedness. He highlighted the importance of urban settings for disaster risk reduction, in the context of unprecedented urbanization and development, risk exposure and the continuing threat of climate change. He stressed that "cities are not just a collection of buildings, but they are about people and their interaction with each other, and their cultural identity. Therefore, city reconstruction needs to ensure social inclusion, promote economic development, and manage complex social, spatial, and economic transformations."

Ms. Saya shared the importance of culture in the recovery from the 2016 Kumamoto earthquakes. She described the reasons Kumamoto Castle became a top priority in the Kumamoto Reconstruction Plan. People have strong connections to their cultural heritage, and a sense of ownership. The city mobilized communities and global support using Kumamoto's mascot "Kumamon" as part of its communications strategy. By paying attention to culture, the reconstruction of Kumamoto Castle offers an important case of building back better and will serve as a reminder to prepare for future earthquake risks.

The Culture in City Reconstruction and Recovery (CURE) framework was introduced as a culture-based approach in fostering social inclusion and resilient recovery. CURE provides a roadmap for post-disaster economic development and management of complex social, spatial, and economic transformations, and for enhancing effectiveness and sustainability of current recovery practices.

Fig. 6-3-2-3 Working Session

6-3-3. The Workshop "Towards Coherent Disaster Risk Reduction Strategy Development, Implementation and Monitoring among the SAARC Member States"

As a first step in a process proposed to revise the SAARC Comprehensive Framework on Disaster Management, UNDRR and the SAARC Secretariat jointly organized the workshop "Towards Coherent Disaster Risk Reduction Strategy Development, Implementation and Monitoring among the SAARC Member States", 9-11 July 2019 in Gujarat, India. The IRP Secretariat and IRP SC Members UNDRR and ADB supported the implementation of the workshop as facilitators and session organizers, along with IRP SC Observers JICA, ASEAN, and SEEDS, and a range of participating partners from more than a dozen international agencies, national and local governments.

The workshop hosted 25 participants for the three-day training event, hailing from all eight SAARC member states, and representing disaster management authorities, the Ministry of Planning, and the Ministry of Finance. Participants worked collaboratively to identify gaps, needs, and opportunities to realign current DRR strategies and implementation action plans to inform a regional DRR framework. Participants considered the unique strengths that a regional platform could offer, where integration could be deepened, and where collaboration could be scaled to reduce the risks and impacts of disasters.

The IRP Secretariat convened and moderated a session on building back better, with a focus on post-disaster housing reconstruction. The session served as an initial consultation for a forthcoming ADPC publication on post-disaster housing reconstruction, and as a thematic session on recovery to engage and support participants as they considered Priority 4 elements for the potential revised framework.

The IRP Secretariat opened the session with a presentation giving context on the state of post-disaster housing reconstruction and on progress in guidance to build back better in housing recovery. The presentation explored the arguments for more people-centered, demand-driven approaches. The presentation set the stage for the consultation to follow and the panel discussion, pointing to where there is continued need for knowledge generation and knowledge exchange.

Mr. Aslam Perwaiz, Deputy Executive Director at ADPC, delivered a presentation on a new knowledge product, currently in development, on housing reconstruction. Mr. Perwaiz shared the research methodology, and the consultative process toward developing the final product. The presentation highlighted a selection of the key areas addressed by the study, including the opportunities and challenges associated with an owner-driven reconstruction process.

The panel drew on a range of perspectives on housing recovery, including from international financial institutions, civil society, and official development assistance. Mr. Steven Goldfinch, Disaster Risk Management Specialist at ADB shared reflections on three cases from the ADB's work in housing recovery, in Pakistan, Kyrgyz Republic, and Fiji. The cases in Pakistan and Fiji looked at the successes and challenges of owner-driven housing reconstruction approaches at a large scale, including training and certification. The Kyrgyz Republic took a contractor

approach to an urban housing reconstruction programme. In rebuilding at scale, the programme was challenged in meeting the needs of residents, as well as with procurement, permitting, labor and protecting cultural assets.

Mr. Manu Gupta, Co-Founder of SEEDS, gave examples from the local Gujarat context, highlighting the importance of not just knowledge transfer, but knowledge exchange - coupling local wisdom and external technical support. He shared the origins of owner-driven housing principles, and the questions that persist about inclusion, technical and financial support. Finally, Mr. NAGAMI Kozo, Senior Representative, JICA Nepal Office, remarked on recent housing reconstruction efforts in Nepal. Mr. Nagami agreed with the preceding speakers on the merits of owner-driven approaches. However, with anecdotes and evidence from the 2015 Nepal earthquake, he noted where bottlenecks continued to hinder recovery and the lessons that can be learned from this experience. He underscored the importance of effective communications, giving an example of build back better messaging that local residents had memorized, yet did not have a clear understanding of the actions they needed to take. He also highlighted the importance local context, for example families might prioritize livelihoods over housing during the growing season.

Fig. 6-3-3-1 Group Photo in the conference

6-3-4. Disseminating IRP/ADRC Knowledge Products at the Fourth National Conference on Promoting Disaster Risk Reduction 2019

The Cabinet Office of Japan hosted the fourth National Conference on Promoting Disaster Risk Reduction 2019 (“Bosai Kokutai”), 19-20 October in Nagoya, Japan. The purpose of the annual conference is to raise public awareness, to learn and share experiences about disaster risk reduction, and to promote self-help and mutual assistance. This year, the conference focused on the theme of, “Preparing for large scale disasters: To think about disaster risk reduction more ordinarily.”

Of the estimated 15,000 participants, more than 200 visited the IRP booth, which was jointly organized with UNDRR. Visitors to the IRP booth included national and local government officials, university professors, and private sector representatives. The IRP Secretariat shared

knowledge products and information about the Platform.

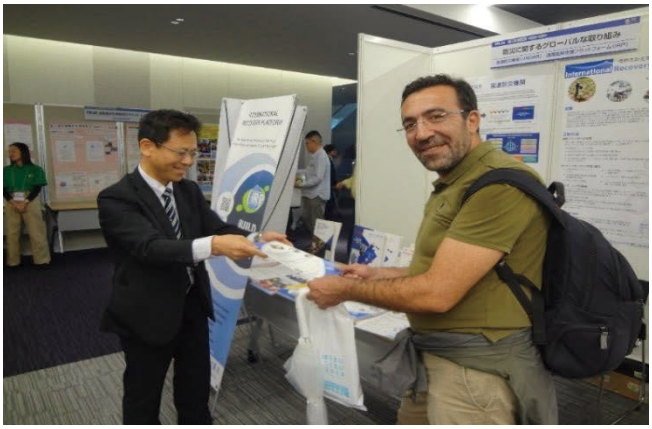


Fig. 6-3-4-1 Exhibition Booth

6-3-5. Practical Solutions for Building Back Better at the World Bosai Forum 2019

The Second World Bosai Forum was held from 9-12 November 2019 in Sendai City, Japan, focused on drawing out concrete solutions to make progress toward Target E of the Sendai Framework for Disaster Risk Reduction. Target E sets a goal of substantially increasing the number of national and local strategies for disaster risk reduction by 2020, and marks the first of the Sendai Framework targets to come due. Toward this goal, the conference drew from the experience and knowledge of its 900 participants from 40 countries, representing policy makers and practitioners from national and local governments, academics and civil society. With sessions on disaster recovery and building back better featured strongly throughout the agenda, IRP Secretariat and members and observers of its Steering Committee were engaged as participants and contributors to the sessions, while the IRP Secretariat also delivered a presentation as a flash talk.

The Second World Bosai Forum drew upon recent experiences in disaster recovery from around the world for discussion. At the opening, the representative of UNDRR delivered a message from Ms. MIZUTORI Mami, Special Representative of the UN Secretary-General for Disaster Risk Reduction and Head of UNDRR. Session speakers brought forth innovative ideas in disaster recovery that have been grounded in, and tested by experience. The discussions that followed offered some valuable insights and lessons that could be distilled from these contextual experiences.

Following the 7.5M earthquake and tsunami that struck Central Sulawesi, Indonesia in September 2018, recovery planners and their partners looked for ways to catalyze recovery and to build back better by identifying synergies between high priority areas in their recovery. Local planners, drawing from lessons learned from the Great East Japan Earthquake recovery, believed that social capital was an important contributor to recovery. They therefore focused their early efforts on restoring local marketplaces, which served a central role in the affected communities as a place where all members of the community would come together. The

markets were also an important precursor for restoring livelihoods, particularly for female entrepreneurs. With nearly 200,000 people displaced, they settled on recreating the marketplaces within the temporary settlements –to catalyze economic activity and rebuild social capital where people already were, and to avoid waiting for the reconstruction of the nearly 40,000 damaged and destroyed homes.

Local planners built on this early investment in marketplaces by developing small and medium enterprise (SME) centers alongside the marketplaces in the temporary settlements. The innovative SME Center became a one-stop shop for getting businesses back on their feet and supporting the development of new business, with support for training, financing, and all the processes and paperwork needed to set up and register a business. The SME Centers tried to prioritize businesses that could contribute to social capital, particularly those that operated in social spaces. The SME Centers also provided space for inventory and warehousing. These centers were so successful in the temporary settlements, local planners have proposed installing them in permanent settlements once they have been reconstructed.

Meanwhile, JICA had partnered with the Indonesian government to try to catalyze resilient housing reconstruction. JICA initiated a carpenter training programme, partnering with certified, qualified instructors to train people who had lost their livelihoods to the disaster. Targeting farmers who had lost their farms in particular, the programme was designed at modernizing livelihoods, developing the capacity for self-recovery in the affected communities, and building more resilient homes.

JICA speakers reflecting on recent recovery efforts spoke of widening the scope of efforts to build back better, particularly with respect to livelihoods recovery, and revitalizing local economies. Building on the experiences shared earlier, JICA speakers noted that affected communities are economically linked with other places that may or may not have been affected. Revitalizing local economies therefore requires that planners consider regional approaches to building back better. Taking a regional or area view allows planners to see critical infrastructure that links with the local economy, and supply chains upon which local businesses may depend.

Local government speakers, representing communities still recovering from the Great East Japan Earthquake spoke of taking a long-term view when building back better. Speakers noted that many affected areas are undergoing demographic transition, with aging and depopulation as significant challenges in their recovery. They urged planners in such situations to consider a forward-looking approach, and what building back better should mean for these communities in 10 years or more. The recovery process can reshape local economies for livelihoods suitable for future generations. To this end they spoke of engaging youth leaders to join in recovery planning, “smart” land use plans, and building resilient infrastructure that supports a vision for the future of these communities.

The IRP Secretariat also delivered a flash talk on recovery governance at the World Bosai Forum, reflecting on the recovery governance literature, recent recovery experiences and recovery institutions. The presentation addressed the need to institutionalize flexibility in

recovery governance, in order to build back better, faster, and more inclusively. The Secretariat presented cases from the Great East Japan Earthquake, Typhoon Haiyan, and the 2004 Indian Ocean Earthquake and Tsunami that illustrate institutionalizing flexibility into financing, pre-disaster recovery plans, arrangements, contracts, and bureaucratic processes in order to accelerate and promote efficiency in recovery.

Fig. 6-3-5-1 Conference

6-3-6. Disseminating IRP/ADRC Knowledge Products at the Sendai Symposium for Disaster Risk Reduction and the Future

The Sendai City hosted the Sendai Symposium for Disaster Risk Reduction and the Future, 10 November in Sendai, Japan. The purpose of the annual conference is to communicate the experience and the lessons from the earthquake, learning about disaster risk reduction, and delivering dairy activities. This year, the conference focused on the theme of, “Delivering our disaster risk reduction to the world and the future.”

Of the estimated 3,700 participants, about 90 visited the IRP booth. Visitors to the IRP booth included national and local government officials, university professors, and private sector representatives. The IRP Secretariat shared knowledge products and information about the Platform and its work.

Fig. 6-3-6-1 Exhibition Booth

7. Awareness Raising through Media and Conferences

In order to enhance awareness raising by addressing a wider range of audience, and thus to contribute further to international efforts for disaster risk reduction, ADRC has been using the mass media, while actively participating in international conferences and events.

7-1. Promotion through Mass Media

ADRC has provided information for the diverse media at home and abroad, which has been disseminated as follows.

Table 7-1-1 TV/Radio Coverage

Media	Date	TV/Radio Station	Description
TV	19 Sept. 2019	NHK	ADRC Visiting Researchers from Turkey visited Shimaji-gawa Dam in Yamaguchi prefecture for inspection.
TV	28 Jan. 2020	SUN-TV	International Recovery Forum 2020 (IRF2020) in Kobe was introduced in “Sun-TV NEWS”.

Table 7-1-2 Newspaper and Magazine Coverage

Date	Name	Features
28 Apr. 2019	Kobe Shinbun Weekly Manabi	As a DRR Organization located in “HAT Kobe” area, ADRC was introduced.
22 July 2019	Hyogo journal	Activities of International Recovery Platform were introduced.
6 Sep. 2019	Mainichi Shinbun	In the JICA seminar conducted by JICA and ADRC, officials and educators from Turkey visited ruins of the Great East Japan Earthquake in Sendai city, Miyagi Prefecture.
19 Sept. 2019	NHK Yamaguchi News Web	ADRC Visiting Researchers from Turkey visited Shimaji-gawa Dam in Yamaguchi prefecture for inspection.
16 Dec. 2019	Hyogo journal	Announcements of the International Recovery Forum 2020 (IRF2020) to be held in Kobe on January 28 2020.
28 Jan. 2020	SUN-TV News (WEB)	International Recovery Forum 2020 (IRF2020) was held with about 180 participants.
17 Feb. 2020	Hyogo journal	International Recovery Forum 2020 (IRF2020) hosted by IRP, Cabinet Office, Hyogo prefecture, etc., was held in Kobe, Japan on January 28.

7-2. Participation in International Conferences and Contribution to Magazines

In order to develop networks with international organizations and NGOs in addition to member countries, ADRC attended the following international conferences to increase its presence and to participate in discussions with relevant organizations on international cooperation for disaster risk reduction.

Table 7-2-1 International Conferences

Conference	Date	Venue	Sponsors	Attendee	Contributions
Silk Road Forum for DRR	10 May 2019	China (Beijing)	China Academy for Science & Technology	Mr. Suzuki	Science and Technology for Early Warning Dissemination
6th Global Platform for DRR	13-17 May 2019	Switzerland (Geneva)	UNDRR, Government of Switzerland	Mr. Suzuki Mr. Ikeda Ms. Shiomi	Report on ADRC activities, information exchange with member countries
High level Committee, UNESCAP/ APDIM	31 May 2019	Thailand (Bangkok)	UNESCAP	Mr. Suzuki	Contribution of Japan to Sand & Dust Storm Disaster
Working Group on Disaster Risk Reduction by the UNESCAP/WMO Typhoon Committee	18-21 June 2019	Rep. of Korea (Ulsan)	UNESCAP, WMO/TC Secretariat and the National Disaster Management Research Institute(NDMI)	Mr. Otsuji	Presentation on the typhoons that struck Japan in 2018
Trilateral DRR and Relief Cooperation among China, Japan and Korea	19 June 2019	Rep. of Korea (Seoul)	Trilateral Cooperation Secretariat	Mr. Ikeda	Introduction about some good practices for DRR in Japan
UNOOSA, International Workshop for GNSS Application to DRR	24-28 June 2019	Austria (Vienna)	UNOOSA, University of South Pacific	Mr. Suzuki	GNSS Application to DRR
APEC 13th Senior Disaster Management Officials Forum and 15th EPWG	20-22 Aug. 2019	Chile (Puerto Varas)	APEC, Government of Chile	Mr. Suzuki Ms. Shiomi	Introduction of Spaced Technology to DRR, discussion of EPWG management and operation

Conference	Date	Venue	Sponsors	Attendee	Contributions
UNESCAP/APDIM, Inter-Governmental Consultation	27 Aug. 2019	Thailand (Bangkok)	UNESCAP/APDIM	Mr. Suzuki	Contribution of Japan to Sand & Dust Storm Disaster
UNSPIDER, International Conference for Space based Technology Application to DRR	12-13 Sept. 2019	China (Beijing)	UNSPIDER, China	Mr. Suzuki	Evolution of Sentinel Asia
The 14th Integrated Workshop of ESCAP/WMO Typhoon Committee	3-7 Nov. 2019	USA (Guam)	UNESCAP, WMO/TC Secretariat	Mr. Arakida	Report of damage and response on Typhoon No. 19 (Hagibis), and introduction of ICT tools for DRR.
Sejoing Institute, International Forum on Trilateral Cooperation	6 Nov. 2019	Rep. of Korea (Seoul)	Sejong Institute	Mr. Suzuki	Trilateral Cooperation for DRR
World Bosai Forum (Oral Session by Typhoon Committee)	11 Nov. 2019	Japan (Sendai)	World Forum	Mr. Suzuki	GNSS Application to Early Warning Information Platform
Asia Pacific Platform for Disaster Risk Reduction Forum Disaster	12-13 Nov. 2019	Australia (Brisbane)	UNDRR, Government of Australia	Ms. Shiomi	Discussion for Asia Pacific Ministerial Conference on DRR
Seventh Joint Project Team Meeting for Sentinel Asia STEP3 (JPTM2019)	12-14 Nov. 2019	Thailand (Bangkok)	JAXA and ADPC	Mr. Suzuki Mr. Ikeda	Discussion about strategic plan for Sentinel Asia and reported latest activities
International Conferences 26th Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-26)	26-29 Nov. 2019	Japan (Nagoya)	Ministry of Education, Culture, Sports, Science and Technology (MEXT), and JAXA	Mr. Ikeda	Explanation about latest activity of Sentinel Asia and strategic plan
Northeast Asia Forum on Capacity Development of Technology for DRR	16-17 Dec. 2019	Rep. of Korea (Incheon)	UNDRR	Mr. Ikeda	Introduction about some good practices for DRR in Japan

Conference	Date	Venue	Sponsors	Attendee	Contributions
SCE Committee of the Whole (SCE-COW/APEC)	18 Feb. 2020	Malaysia (Putrajaya)	Malaysia, APEC	Mr. Suzuki	Introducing Emergency Preparedness Working Group Workplan 2020
ASEAN High Level Symposium of DRR	26-27 Feb. 2020	Indonesia (Jakarta)	ASEAN	Ms. Shiomi	Information exchange with participating countries and attendants

Table 7-2-2 Academic Conferences and Symposium

Conference	Date	Venue	Sponsors	Attendee	Contributions
8th Civil Engineering Conference in the Asian Region (CECAR8)	14-19 Apr. 2019	Japan (Tokyo)	The Asian Civil Engineering Coordinating Council (ACECC)	Mr. Arakida	Reported on Restoration of Kumamoto Castle after Kumamoto Earthquake
Japan Geoscience Union Meeting (JpGU) 2019 (Governance for Transboundary Disaster)	26-30 May 2019	Japan (Chiba)	JpGU Meeting Organizing Committee	Mr. Suzuki Mr. Arakida	Introduction of Utilization of Space Satellite for Emergency Response, and Intervention of Regional cooperation for Transboundary Disaster)
World Bosai Forum (Technical Committee 21 Session)	11 Nov. 2019	Japan (Sendai)	World BOSAI Forum	Mr. Arakida	Reported on Restoration of Kumamoto Castle after Kumamoto Earthquake
Human Resource Development and Space Data Utilization for Disasters	9 Jan. 2020	Indonesia (Bali)	Yamaguchi University, Udayana University	Mr. Ikeda	Reported on Trends in Emergency Observation Requests of Sentinel Asia.
Governance of Recovery from Mega Disaster	25-29 Feb. 2020	Nepal (Kathmandu)	Minitry of Home Affairs, National Reconstruction Authority	Mr. Suzuki Mr. Potutan	Intervention of Governance of Recovery, Introduction and Demonstration of ICT tool for DRR

Table 7-2-3 Articles

Newspaper/Journal	Date	Author	Title
“Disaster Response”, Global Alliance of Disaster Research Institutes (GADRI)	Dec. 2019	Ms. Shiomi	Disaster Report on 2019 Typhoon Hagibis