1. Asian Disaster Reduction Center.

1. Asian Disaster Reduction Center

Established in 1998, the Asian Disaster Reduction Center (ADRC) is a regional initiative aimed at enhancing disaster resilience, building safer communities, and creating a society where sustainable development is attainable among its 31-member countries (Annex 1: History of Establishment of ADRC).

1.1. Key Activities

ADRC has three pillars of activities to achieve its goals and objectives:

- **Information sharing**. This includes the ADRC website, GLobal unique disaster IDEntifier (GLIDE) number system, Sentinel Asia, and Asian Disaster Reduction Conference (ACDR).
- **Human resource development**. This includes the Visiting Researchers (VR) programs as well as seminars, workshops, and training on disaster risk reduction.
- **Cooperation among member countries and partner organizations**. This includes development and promotion of innovative tools as well as forging partnerships and networks to advance community resilience to disasters.

After 21 years of functioning as part of the Urban Disaster Research Institute (URDI), ADRC became independent and obtained a corporate status in April 2020 following the launching of the ADRC Foundation. Under this newly reconfigured status, ADRC gained greater flexibility in performing its international operations as well as bolstering its domestic activities.

1.2. Composition

ADRC is composed of member and advisor countries (Figure 1.1. Map of member and advisor countries) as well as partner organizations.

Figure 1.1. Map of Member and Advisor Countries

1.2.1. Member and Advisor Countries

At the outset, ADRC was comprised of 22-member countries, 4-advisor countries, and 1-observer organization. Gradually, the membership expanded with Armenia joining in August 2000, the Kyrgyz Republic in July 2002, Pakistan in July 2005, 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 (Table 1.1. Member and Advisor Countries).

Table 1.1. Member and Advisor Countries

1998 (At the time of foundation)	India, Indonesia, Uzbekistan, Kazakhstan, Cambodia, Singapore, Sri Lanka, Thailand, Republic of Korea, Tajikistan, China, Japan, Nepal, Papua New Guinea, Bangladesh, Philippines, Vietnam, Malaysia, Myanmar, Mongolia, Laos and Russia (Member countries: 22) Australia, Switzerland, New Zealand and France (Advisor countries: 4) Asian Disaster Preparedness Center (Observer)
2000	Armenia
2002	Kyrgyz Republic
2004	USA (Advisor country)
2005	Pakistan
2007	Bhutan, Yemen
2009	Azerbaijan
2010	Maldives
2012	Islamic Republic of Iran
2018	Turkey

ADRC's counterparts are the disaster risk management (DRM) agencies (Table 1.2.).

Table 1.2. Counterpart Agencies

Country	Counterpart
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 Disaster Management Agency (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
Lao PDR	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（SCDF）
Sri Lanka	Disaster Management Centre（DMC）, 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

1.2.2. Partner Organizations

To contribute to the efforts of disaster risk reduction in Asia, ADRC considers 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), and the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP).

2. Highlights of FY2020.

2. Highlights of FY 2020

In 2020 and early 2021, many of ADRC activities were implemented through virtual means due to travel restrictions brought about by COVID-19 pandemic.

2.1. Asian Conference on Disaster Reduction 2020

With the theme, "Can we Adapt to the New Normal?", the Asian Conference on Disaster Reduction (ACDR2020), 20-22 October 2020, virtually gathered representatives from ADRC member countries, partner organizations, private sector, and the general public to share experiences and lessons.

20 Oct: Opening and Keynote Speeches

On the first day, three dignitaries, namely, HE Mr OKONOGI Hachiro, Minister of State for Disaster Management for the Government of Japan; HE Mr Rustam Mazarzoda, Chairman of the Committee of Emergency Situations and Civil Defense of Tajikistan; and Prof. HAMADA Masanori, Chairman of ADRC delivered opening remarks touching on the rationale of organizing the event and the relevance of the theme. Tajikistan would have originally hosted the ACDR2020 but curtailed by COVID-19 pandemic. So, the country is hoping to have another opportunity to host the event in the future. Following the remarks was a special presentation delivered by Mr NAKAO Akifumi, Director of the International Cooperation Division of the Disaster Management Bureau of the Cabinet Office of Japan.
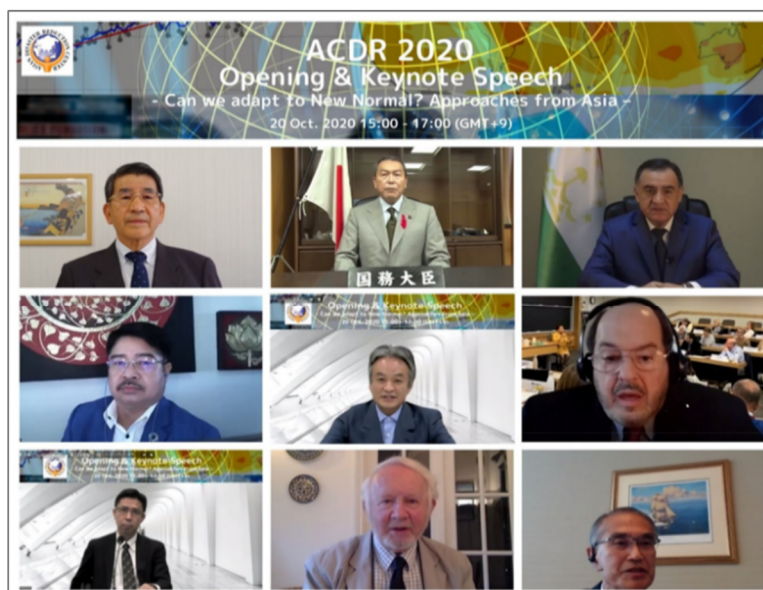

Figure 2.1. Opening and Keynote Speakers

After this, keynote speeches were delivered by Mr Sanny Ramos Jegillos, Senior Adviser of the Disaster Risk Reduction Bangkok Regional Hub of the UNDP; Prof. ISOBE Masahiko, President of the Kochi University of Technology; Prof. Arnold M. Howitt, Faculty Co-Director of the Program on Crisis Leadership at the Harvard Kennedy School; and Prof. Ian Robert Davis, Visiting Professor at Kyoto, Lund, and Oxford Brookes Universities. Topics covered in the keynote speeches included multifaceted impacts of COVID-19 in the Asia-Pacific region, two-level framework of coastal disaster reduction; challenges of concurrent crises, and countermeasures to tackle risk reduction and climate change from intensifying hazards.

21 Oct: DRR Measures and Challenges to Intensifying Disaster Risks

Dr Manzul Kumar Hazarika of the Asian Institute of Technology moderated this session, which included presentations from member countries and experts. In Myanmar, Ms Myat Moe Thwe reported that managing cyclone risk remains challenging. One of the measures introduced was the development a platform called MUDRA which provide data to ministries and line agencies. Some concrete actions included the building of 236 multipurpose shelters and establishment of cyclone response fund. In Vietnam, Ms Nguyen Thi Xuan Hong and Mr TANAKA Yasuhiro jointly reported the challenges brought by flooding. While structural measures such as embankments are put in place, suitable legal framework as well as the development of a Comprehensive Flood Management Plan are also pursued.
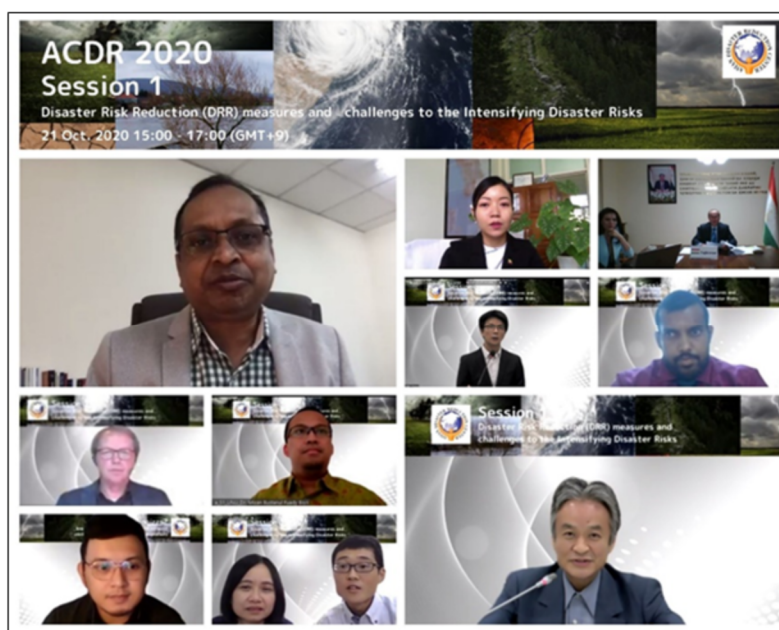

Figure 2.2. Session 1 Speakers

In the Maldives, Mr Umar Fikry reported that coastal erosion is becoming a big challenge due to the effects of tropical cyclones and storm surges. Countermeasures are being deliberated, noting that as the temperature rises by 2 degrees, the coral reefs will be disappearing from the Maldives in the next 12 years. In Tajikistan, Mr Kamalov Jamshed reported that institutional capacity of the national platform could face challenges in implementing its National Disaster Risk Reduction Plan 2030. So, the platform intensively collaborates with other agencies in pursuing various disaster prevention projects (e.g., ADB, the World Bank, JICA, and the King Salmon Foundation). In Japan, Mr TAKAHASHI Kazuaki reported the challenges posed by climate change and corresponding mitigation activities, such as the government support in achieving zero greenhouse gases by 2050.

Experts showcased new technologies in this session. Prof. Cees van Westen (University of Twente) introduced digital technology for disaster prevention that is implemented in Asian countries, including Tajikistan and Vietnam. This technology simulates future scenarios through risk assessment and mapping, and uses a multi-hazard framework. Dr Mizan Bustanul Fuady Bisri (United Nations University) introduced a knowledge management tool called CARI, an online search engine that could locate locally-relevant knowledge on DRR. This tool addresses the gaps of fragmented and scattered knowledge that overlooked locally existing information. Mr Keith Paolo C. Landicho (AHA Centre) reported various platforms at AHA Center that are used to monitor and analyze disasters. One of these is the ASEAN Science-based Disaster Management Platform (ASDMP), which is interactive research portal that has access to thousands of disaster research products in Southeast Asia.

22 Oct: Disaster Countermeasures in the Midst of COVID-19

Prof. ISHIWATARI Mikio (University of Tokyo) moderated this thematic session, which included a keynote speech from Dr Jemilah Mahmood (Malaysia) as well as presentations from member countries and partner organizations. In the Philippines, Dir. Claudio Yucot reported new practices in responding to typhoon Ambo (Vongfong) in May 2020: (i) suspected COVID-19 cases were segregated from the evacuation area; (ii) separate facilities were designated to take care of suspected COVID-19 cases; and (iii) occupants of the evacuation room must be either members of one family or people who know each other from the same neighborhood. In India, Mr Sandeep Poundrik said that the National Disaster Management Authority (NDMA), in anticipation of the cyclone season (e.g., Amphan in May 2020), developed a GIS-based Decision Support System (DSS) platform to manage disaster

in the midst of COVID-19. In the Republic of Korea, Mr KANG Jinmo mentioned that the Ministry of the Interior and Safety (MOIS) developed a New Guideline for the Temporary Shelter to Prevent the Spread of COVID-19. This guideline specifies the quarantine measures prior to facility operations and the stockpiling of hygienic supplies (e.g., sanitizers and facemasks). In Armenia, Ms Syuzanna Vardazar Kakoyan said that the Ministry of Emergency Situation (MES) integrated COVID-19 response in the Risk Analysis and Emergency Response Plan. In Nepal, Mr Beda Nidhi Khanal said that the National Disaster Risk Reduction and Management Authority (NDRRMA) strengthened the institutional coordination between the disaster response system and the COVID-19 management system in all levels of the government.

Figure 2.3. Session 2 Speakers

Partner organizations reported how they extended support to DRM institutions in innovative ways. Ms Helen Mould (OCHA) said that OCHA-ROAP supports 12 Asia-Pacific countries through the implementation of the Global Humanitarian Response Plan (GHRP), particularly by seeking the funding. Prof. SHIBASAKI Ryosuke (University of Tokyo) reported the open-source software called "Mobipack" that serves as decision support system (DSS) tool for managing disasters during COVID-19 pandemic. In his commentary, Dr Khamarrul Azahari Razak (UTM Malaysia) mentioned that responding to disasters during pandemic requires multi-level collaboration and enhanced multi-hazard preparedness efforts.

At closing session, HE Mr AKAZAWA Ryosei (Government of Japan) thanked the over 240 participants from 22 countries, partner organizations, and general public who actively joined the virtual conference. Dr OGAWA Yujiro (ADRC) also expressed gratitude to member countries and partner organizations for sharing reports and case studies. Outcomes of ACDR2020 showed that in Asia, most governments have introduced adaptation measures to reduce the impact of intensifying disaster risks as well as address the concurrent crises experienced during the COVID-19 pandemic.
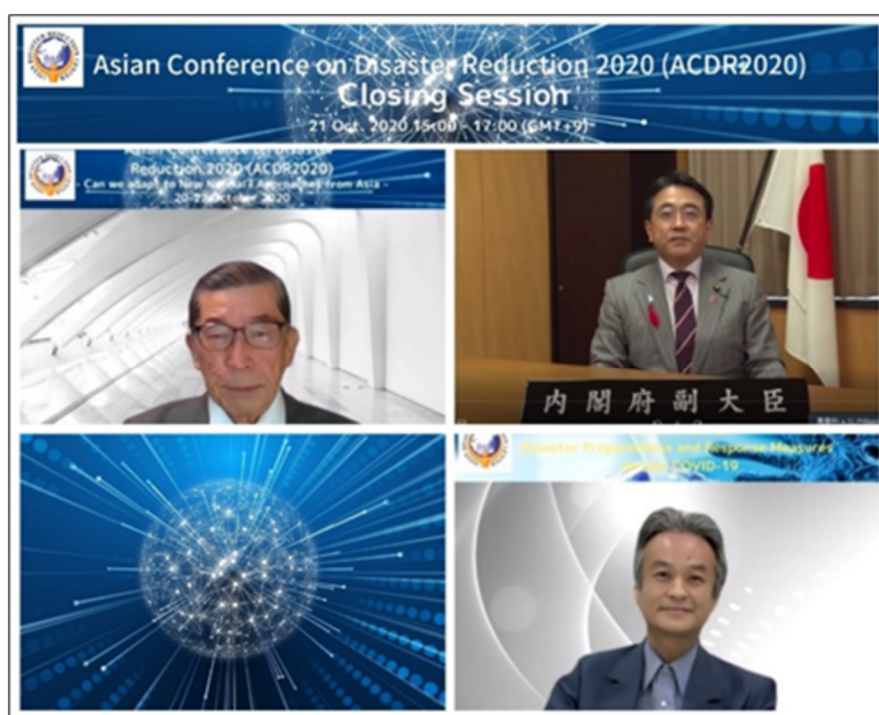
Figure 2.4. Closing Session Speakers

2.2. DRR Measures During COVID-19 Pandemic

On top of COVID-19, Asian countries continue to experience disasters from natural hazards. Considering this, ADRC initiated to collect disaster risk Reduction (DRR) measures during COVID-19 pandemic from ADRC member countries, which are available on the ADRC website.

2.2.1. Reports on Challenges in Preventing the Spread of COVID-19 Infection

In May 2020, some ADRC member countries (e.g., Republic of Korea, China, Japan, and Singapore) had already documented their respective practices in responding to COVID-19. China, Singapore, Japan, and Republic of Korea highlighted the importance of learning from past experiences in managing SARS and bird flu by building on those measures and

procedures that were already in place. To enrich and share information about the experiences of other countries, ADRC staffers and former visiting researchers developed case studies on the challenges in preventing the spread of COVID-19 infection.

Detailed case studies of the Philippines, Japan, Sri Lanka, Armenia, and France are among those uploaded on the ADRC website.
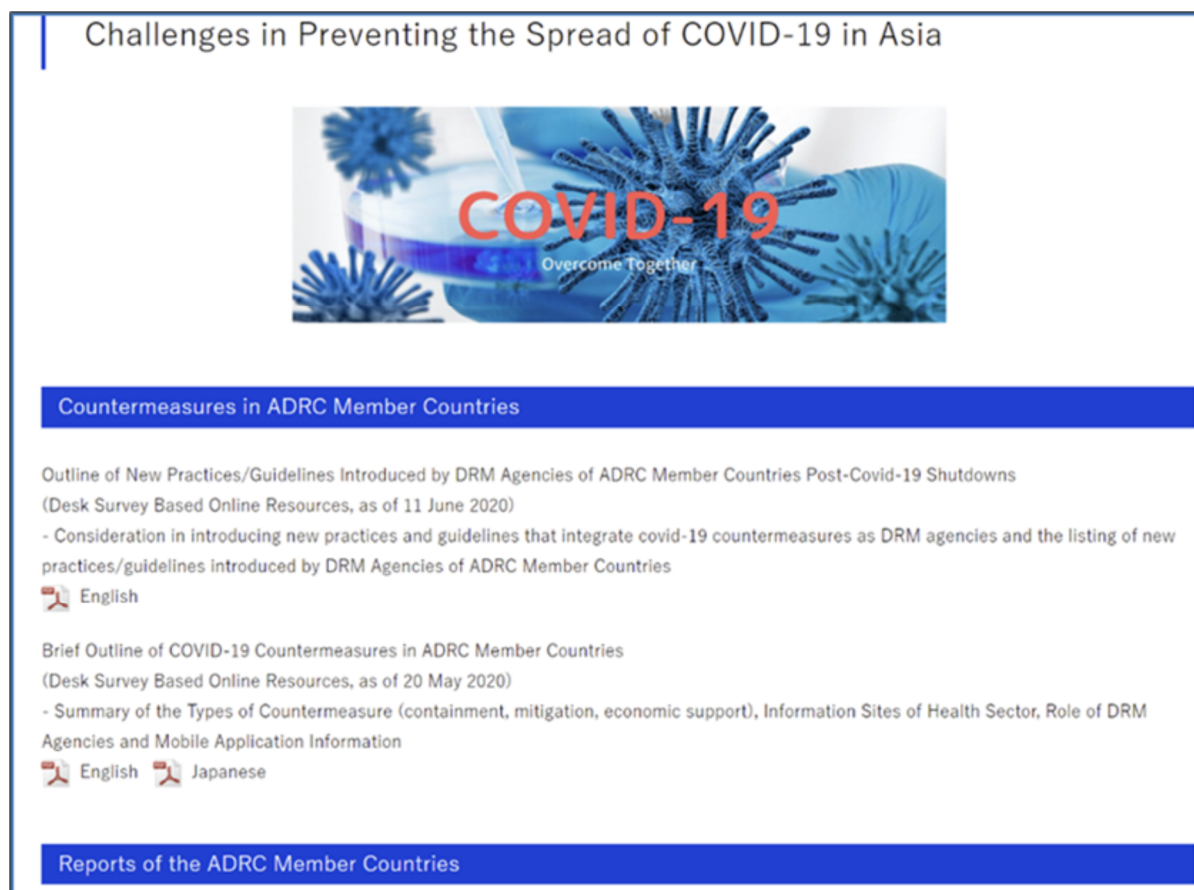

Figure 2.5. Screenshot of COVID-19 Information

2.2.2. Countermeasures to Prevent the Spread of COVID-19 Infection

Disasters incidents during COVID-19 pandemic, in May 2020 alone, included Typhoon *Vongfong* (Philippines) and Cyclone *Amphan* (India and Bangladesh). Cyclone Amphan also impacted other countries, including Sri Lanka, Thailand, and Myanmar that were likewise in lockdown situations due to the pandemic. Responding to these disasters required additional measures, such as social distancing, hand-washing, and face covering.

In ADRC member countries, countermeasures to prevent the spread of the new coronavirus have been introduced at varying degree in terms of containing, mitigating, and

managing the impacts of COVID-19 pandemic. Example of indicative variations of these measures are shown in Table 2.1.

Table 2.1. Variation of Countermeasures Japan & Philippines

Preventive Action	The Philippines	Japan
Staying Home	• Mandatory • Imposition of lockdowns (*military, police, and related enforcement agencies are engaged*)	• Non-Mandatory • No imposition of lockdowns (*drawing on individual responsibility and cooperation*)
Social/Physical Distancing	• Cancelation of group events (e.g., church worship, beach parties, and cockfights)	• Avoidance of 3Cs: crowds, closed spaces, closed contacts; • Also, cancelation of group events (e.g., marathons)
Wearing Mask	• Legislated at local governments (penalty for violation of ordinance)	• Encouraged but not legislated • National Government announced giving out masks
Washing Hands	• Encouraged (on your own)	• Encouraged (with wide establishments' support)

ADRC member countries vary in the degree of implementing the common countermeasures for COVID-19 due to differences of local situations, including socio-political contexts. For instance, Japan and the Republic of Korea did not implement a nationwide lockdowns or total travel restrictions while countries like India and the Philippines imposed strictest lockdowns, even commanding the military to enforce those restrictions.

2.3. Tsunami DRR Seminar Series

ADRC organized a series of online Tsunami DRR Seminars, during FY 2020, to share the latest research findings and experiences on the topic. The seminars also provided the opportunity to promote the World Tsunami Awareness Day to ADRC member countries, DRR stakeholders, and the general public.

2.3.1. First Seminar: 24 November 2020

Speakers:

- Prof. IMAMURA Fumihiko
  Professor, International Research
  Institute of Disaster Science (IRIDeS),
  Tohoku University

- Dr Anawat Suppasri
  Associate Professor, International
  Research Institute of Disaster
 Science (IRIDeS), Tohoku University
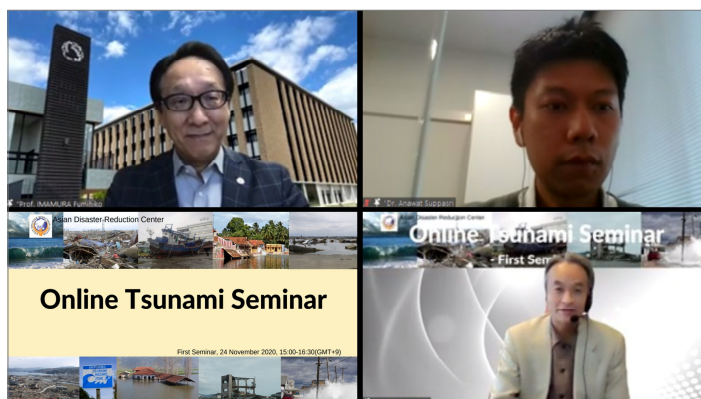
Summary

Prof. IMAMURA recalled the Great East Japan Earthquake of 11 March 2011, and explained that it was a triple disaster tragedy simultaneously experiencing earthquake, tsunami, and nuclear power plant failure. It was the time, where DRR experts including those from Tohoku University realized the limitations of knowledge (e.g., multiple disasters) and technology (e.g., real-time early warning tools) in Tsunami DRR. To help address knowledge and technology gaps on tsunami DRR, the Tohoku University established IRIDeS by building on its existing group of interdisciplinary experts. Dr Anawat Suppasri shared lessons from the 2011 Tsunami experience in Japan. In Kamaishi, all students (of nearly 3,000) survived because they calmly evacuated to the higher location, following what they learned from tsunami mitigation training and drills. Based on these lessons, tsunami countermeasures improved, such as by classifying tsunamis into two-levels. Level 1 tsunamis are those frequently occurring, and less powerful. In this case, structural measures such as levees and seawalls are useful. By contrast, Level 2 tsunamis are those that occur once in hundred or thousand years, and very powerful. In this case, non-structural measures such as evacuation and awareness raising are important to save all human lives.

2.3.2. Second Seminar: 22 December 2020

<u>Speaker</u>

Dr Khaerunnisa, Associate Professor University of Atma Jaya Yogyakarta (UAJY)
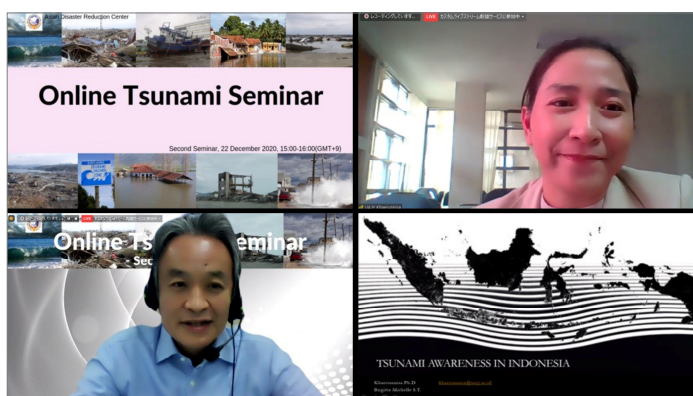
<u>Summary</u>

Tsunami education in Indonesia is carried out using different media, including tsunami education programs in TV, digital fun games for smart phones, YouTube channel, posters, guidelines, and formal education in schools. To describe the tsunami awareness of people in Indonesia, Dr Khaerunnisa presented a result of a survey that she administered to 100 respondents, and highlighted the following:

- Majority of the respondents know whether they live in tsunami-prone area or not. Their assessment of hazard is based on experience, knowledge of past tsunamis, and information government websites and local news.

- Majority of the respondents said that in the scale of 1-5, their level of awareness increased up to 4th level, noting that they are receiving education and training related to tsunami.

- Majority of the respondents said that social media and evacuation drill are the most effective means to increase the level of awareness.

Dr Khaerunnisa pointed that it is essential to cross analyze the survey responses with factual data such as record of tsunami-prone areas and existing hazard maps for validation. In doing so, she observed that there is no significant correlation between the actual experience of tsunami and the current knowledge and behavior. In view of this, she suggested that education programs should be accompanied with regular training and drills to make comprehension more effective.

2.3.3. Third Seminar: 26 January 2021

<u>Speaker</u>

Dr OHTSU Nobuhito

Senior Researcher, National Research Institute of Fire and Disaster Fire and Disaster Management Agency, Ministry of Internal Affairs and Communications

<u>Summary</u>

Dr OHTSU said that to ensure safety from tsunami, the ideal option is to resettle vulnerable people as well as relocate vulnerable building away from the anticipated tsunami inundation areas in advanced. If this option is difficult, then the next option is to understand and implement measures on:

- How a safer space design can reduce the necessity of evacuation
- What method can be used to measure and predict evacuation speed/time
- How to apply this practical evacuation method for zoning

In tsunami-prone areas, space-related factors such as: evacuation routes, distance of evacuation sites from residence, location of higher grounds, target evacuation points, and location of tsunami evacuation building can affect total evacuation time. To improve space design of evacuation for pedestrian, planners need to evaluate various options (e.g., relation, vertical evacuation, horizontal evacuation, or secondary evacuation) of saving lives from tsunami. To ensure safe evacuation of vulnerable people, Dr OHTSU stressed that it is important to measure the speed of evacuation to determine a successful evacuation.

2.4. Enhancement of GLIDE

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. This method of collecting and sharing information is not efficient. First, this requires searching many websites of relevant individual organizations every time a disaster occurs. Second, there is no standardized naming protocol for disasters, as various organizations could assign different names. Third, the website links may be lost when an organization modifies the structure of its database or website. To address these issues, ADRC and UNOCHA ReliefWeb with technical assistance from LaRED developed the Global unique disaster IDEntifier (GLIDE) in 2004 to give common but unique numbers to disasters all over the world. GLIDE promotes disaster information sharing among databases developed by many different DRR organizations, research institutions, and governments. GLIDE numbers are issued to disasters immediately after occurrence.

As noted towards the end of FY 2020, over 7,200 GLIDE numbers have been issued and shared to over 2,000 GLIDE subscribers since 2004. ADRC, UNOCHA ReliefWeb, IFRC, and JRC/EC are tasked of issuing the GLIDE numbers.
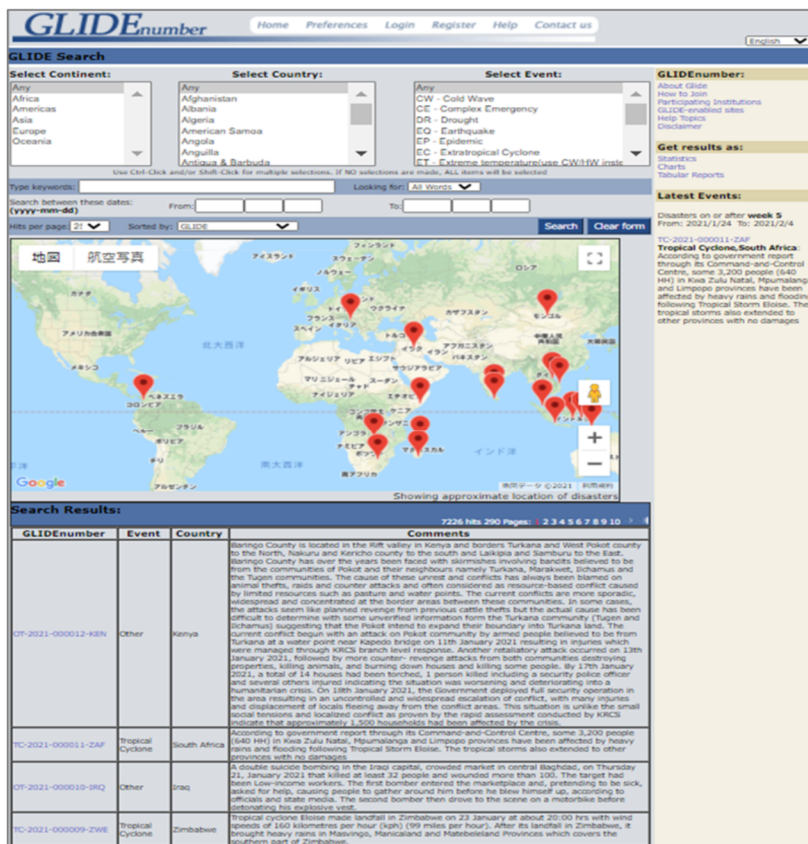

Figure 2.6. Screenshot of GLIDE Website

2.4.1. Introduction of API

It was also in FY 2020 that ADRC developed the Application Programming Interface (API), a tool to connect application software so that the application of GLIDE will be facilitated. In the process of the development, interviews were conducted with GLIDE partner organizations such as UNOCHA, UNDRR, EU/JRC for their experiences and opinions. The API was shared and reported at the occasion of the Stakeholder Meeting.
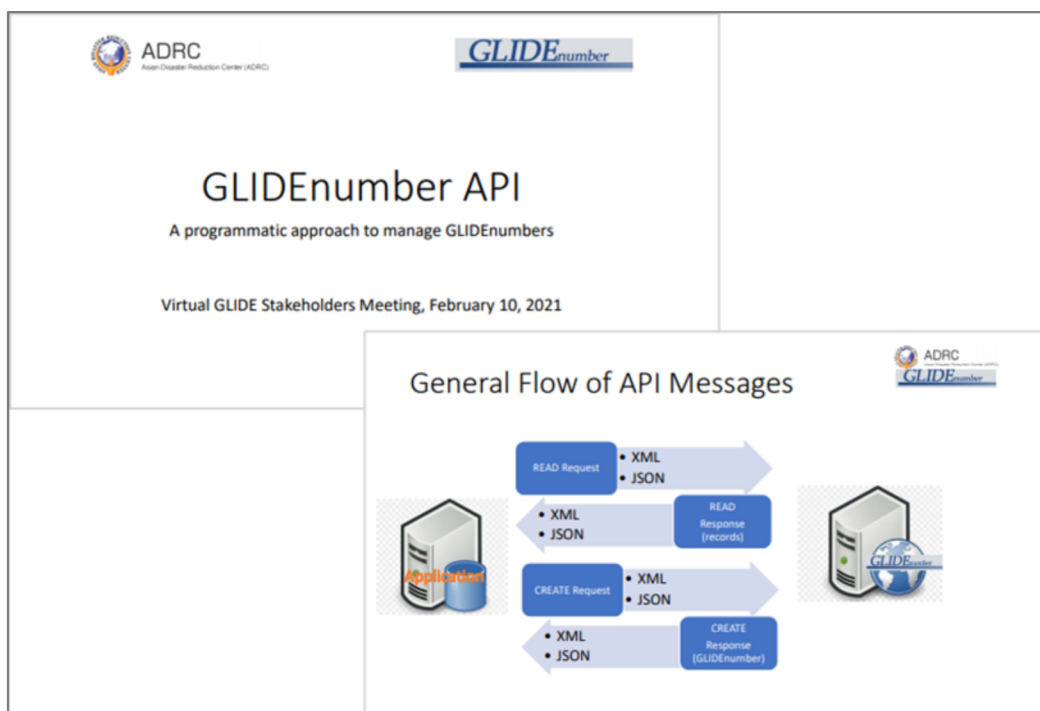

Figure 2.7. Presentation of GLIDE API

2.4.2. Contributions of GLIDE

GLIDE has contributed to the development of Sendai Framework Indicators. There are 38 main indicators and Technical Guidance for Monitoring and Reporting on Progress have been identified to measure the implementation status of the SFDRR. GLIDE numbers are useful reference to the indicators that measure the progress of achieving the global targets of the Sendai Framework. Each country's progress report is annually published in the Sendai Monitor, and this helps inform the global trends in the reduction of risk and losses.

Moreover, GLIDE is contributing to the Asia and the Pacific Data Integration Community of Practice (DI-CoP), a UNESCAP initiative, aimed at supporting the member countries integrate various statistical data. The national statistical bureau and relevant organizations join the DI-CoP to work for integration of a variety of data such as demographic, economic and social data collected by national and local governments as well as disaster data GIS information.

ADRC made a presentation on GLIDE project at DI-CoP on 12 May 2020 introducing the system and the significance of connecting disaster data and relevant information.

2.5. Notable Disasters in 2020

On its website, ADRC releases information of latest disasters (e.g., those triggered typhoons, floods, droughts, and earthquakes) to keep member countries and the general public informed. Below are some of the notable disasters in 2020.

2.5.1. Typhoon Vamco, November 2020

On Nov. 13, typhoon Vamco made landfall in Manila and nearby provinces, killing 42 people. The typhoon was the deadliest of the 21 the country has experienced in 2020, and resulted in the worst flooding. Vamco followed typhoon Goni, the world's strongest typhoon of the year, compounding the damages in the Philippines.

2.5.2. Cyclone NOUL, September 2020

Tropical Cyclone NOUL made landfall in Viet Nam over the coastal area between Dong Ha and Hue cities (Thua Thien Hue Province) on 18 September 2020. According to the Viet Nam Disaster Management Authority (VNDMA), more than 500,000 people were evacuated in the central provinces. Causing heavy flooding, 253 people were reportedly been killed or are missing. An estimated 7.7 million people live in the affected areas (in nine provinces) and more than 600,000 houses were flooded, damaged or destroyed.

2.5.3. Typhoon Haishen, September 2020

Agricultural damage across Japan were at US$118 million. About 107,540 households were without power across the Kyushu region on 7 September 2020. Moreover, more than 200,000 households were out of power in Kagoshima and 3,930 households in Okinawa. In the Republic of Korea, Haishen displaced 3,100 people and left at least 75,000 households without power in Ulsan City.

2.5.4. Torrential Rain, July 2020

On 4 July 2020, record-breaking torrential rains brought a series of floods in the prefectures of Kumamoto and Kagoshima. Following overnight rains, authorities instructed more than 75,000 residents to evacuate. About 203,200 residents were instructed to shelter in place, and 109 shelters were opened in the region.

2.5.5. Cyclone Amphan, May 2020

On 20 May, India and Bangladesh were hit by cyclone Amphan, killing more than 85 people. Millions of people were evacuated due to the storm, one of the biggest storms in the region in the past decade. Before making landfall, Amphan was the strongest storm ever recorded in the Bay of Bengal.

Section 2

3. Information Sharing on DRR

3. Information Sharing on DRR

ADRC collects and disseminates disaster risk reduction (DRR) information, primarily on website (http://www.adrc.asia), to provide member countries and the general public of documented experiences, lessons, tools, and practices that maybe useful for their response, mitigation, and preparedness activities.

3.1. Information Collection

Supported by its 31-member countries, ADRC collects information on DRR systems, plans, and policy measures based on each country's disaster risk situations. Additionally, ADRC also collects information from other countries and organizations in collaboration with the ADRC Visiting Researchers (VRs) and the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA). The basic DRR information that ADRC collects are:

- Disaster risk management systems (e.g., legal and institutional frameworks, disaster management plans, and manuals)

- Disaster response and recovery activities (e.g., emergency response activities in affected area/country)

- Disaster events due to natural hazards (e.g., descriptions of natural disasters such as earthquakes, floods, cyclones, and so on, and the damages)

3.1.1. Country Reports on DRR

Since its establishment, counterparts in the member countries regularly provide report and information on DRR, which are stored in the ADRC database. As these reports are usually posted in the respective counterpart's websites, ADRC helps facilitate in sharing the website links and relevant information to other member countries and partner organizations. The updated record of country reports as of end of FY 2020 is shown in Table 3.1.

Table 3.1. Years Country Reports Updated as of FY2020

Country	Year Prepared (Information frequently updated by VRs)
Armenia	2001, 2002, 2003, 2005, 2006, 2010, 2012, 2015 2016, 2017
Azerbaijan	2011, 2014
Bangladesh	1998, 1999, 2001, 2003, 2005, 2006, 2010, 2011 2013, 2020
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, 2015, 2016, 2017, 2018, 2019
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, 2020
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, 2020
Turkey	2019
Uzbekistan	1998, 1999, 2005, 2006, 2013, 2015
Vietnam	1998, 1999, 2005, 2006, 2017
Yemen	2009, 2012, 2014

As stated in section 2.2., most DRR reports from member countries in FY 2020 put emphasis on DRR activities during COVID-19 pandemic. To some extent, other member countries submitted thematic papers about preparing and responding to disasters amidst the pandemic. These papers were presented at the Asian Conference on Disaster Reduction (ACDR) 2020 and published by ADRC both in print and on the website.

Section 3

3.1.2. Latest Disasters

Once disaster occurs (especially in member countries), latest information and updates of that event are posted on ADRC website. Basic information includes: date of occurrence, location, impacts and damage situations as well as relevant links to reports, articles, map, relief efforts, and satellite images. Sources of information and updates include ADRC counterparts, partner organizations, and networks (e.g., media, governments, international organizations, research institutions and civil societies). Latest disaster information is posted on top page of the ADRC's website (Figure 3.1). Clicking on any of the latest disaster, the reader will be linked to more detailed information (Figures 3.2 to 3.5).
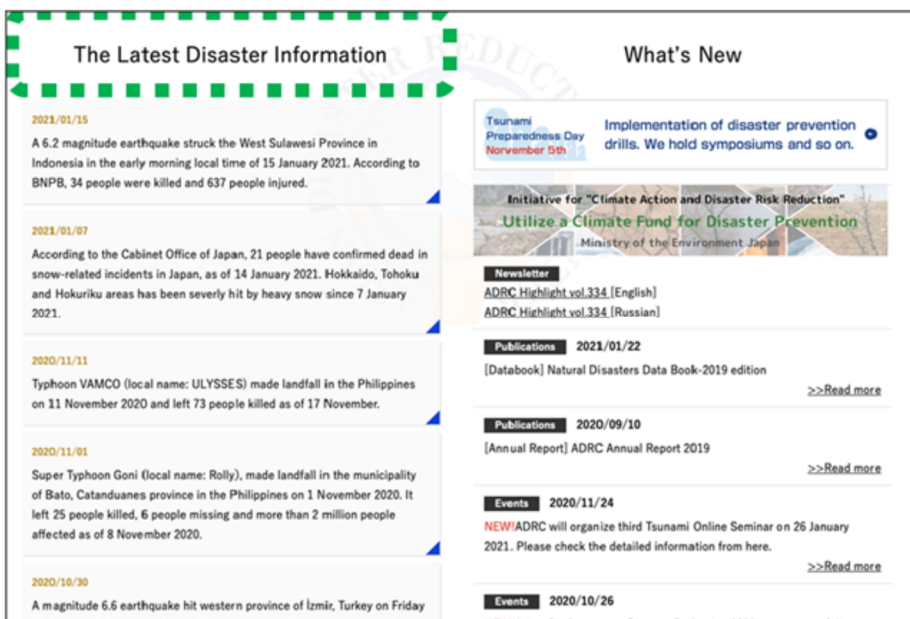
Figure 3.1. Latest Disaster Information on ADRC Homepage

Figure 3.2. Basic Information

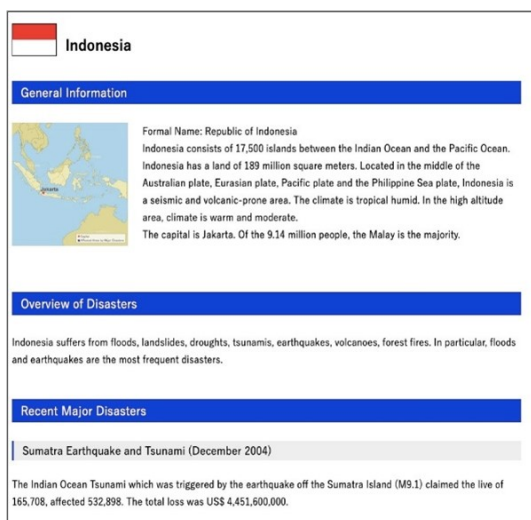
Figure 3.3. Link to GLIDE

Figure 3.4. Detailed Information

Figure 3.5. Link to Sentinel Asia

The set of disaster information provided on the ADRC website is comprehensive due to wide range of reliable ADRC partners that provided the data.

3.1.3. Natural Disaster Databook

Disaster database and records are useful for policy making as well as in assessing and analysing disaster management plans. In this regard, ADRC concluded an MOU on disaster data utilization with the Centre for Research on the Epidemiology of Disasters (CRED) to analyse disaster impacts based on the data from Emergency Events Database (EM-DAT) maintained by CRED. Following the agreement, ADRC annually issues the Natural Disaster Data Book (Figure 3.6), which covers data on disaster-specific issues of the year.
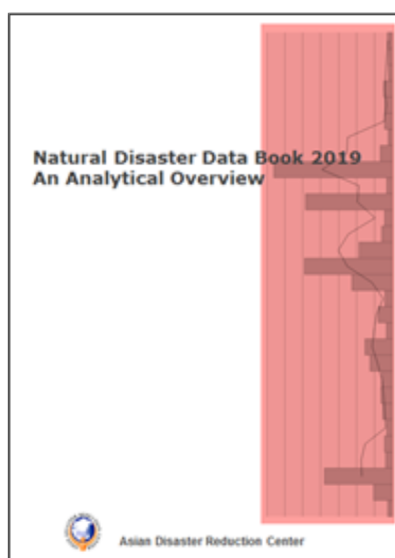

Figure 3.6. Cover of Natural Disaster Databook 2019

Examples of information contained in the Natural Disaster Data Book of FY 2019 are shown in Figures 3.7 to 3.8.
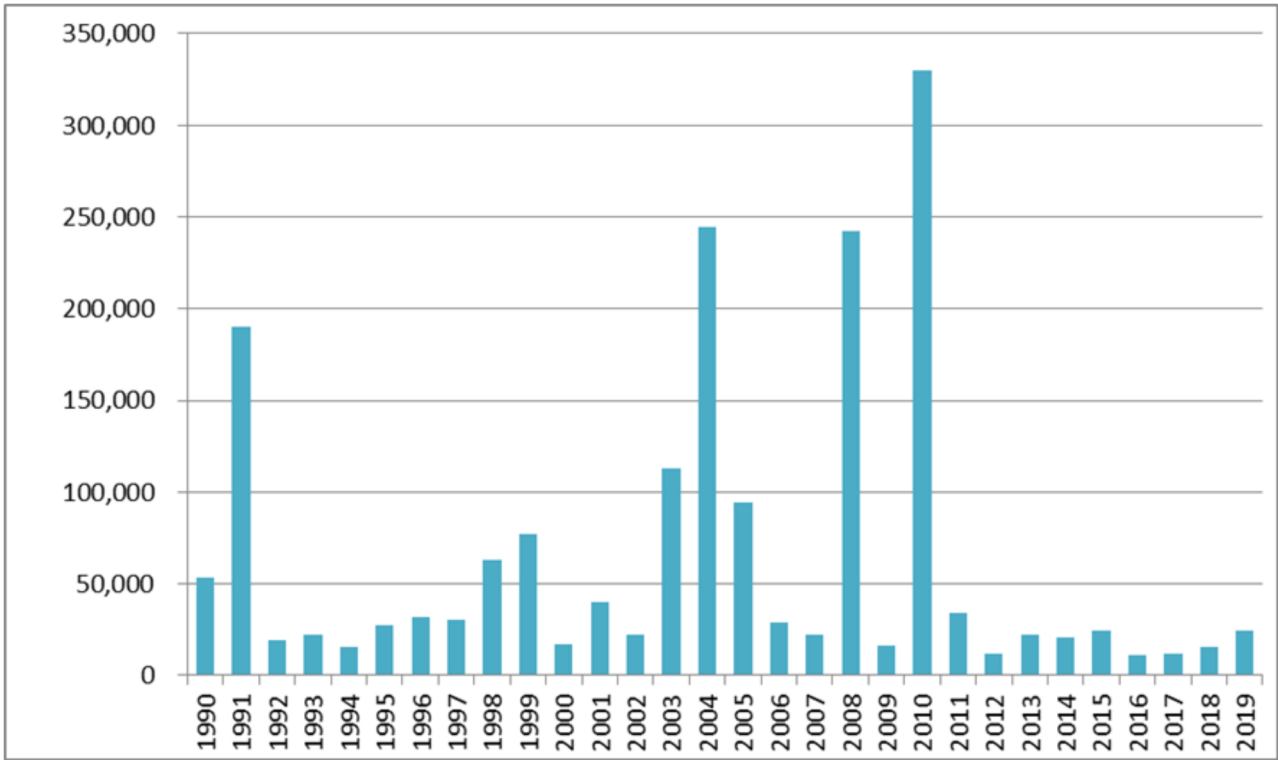

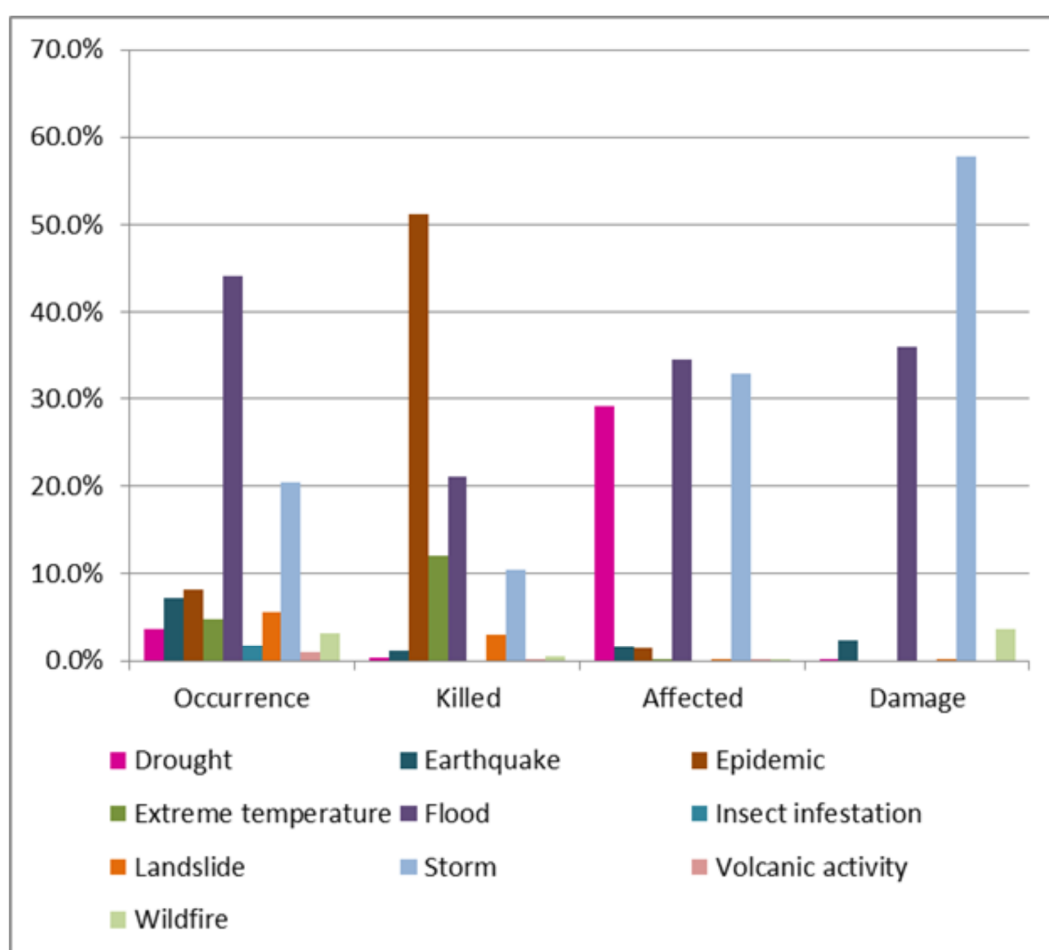Figure 3.7. People Killed from Disasters in the World (1990-2019)

Figure 3.8. Impacts by Disaster Type in 2019

These figures indicate that the number of people killed by disasters is decreasing, while impacts of disasters, especially from storm, are increasing in the past 30 years.

3.2. Information Dissemination

Among the many ways of disseminating DRR information are: regular issuance of ADRC Highlights (a monthly newsletter); dissemination via GLIDE; dissemination through Sentinel Asia and other similar platforms; and sharing of information at conferences and learning events.

3.2.1. ADRC Newsletter

One of ADRC's important tools for information dissemination is the ADRC Highlights, which has been issued since 1 June 1999. It had been issued twice a month until FY 2007. After that, beginning 2008, it has been issued monthly following the renewal of its design.

Figure 3.9. ADRC Highlights November 2020 Edition

ADRC Highlights (published in English, Russian, and Japanese) is uploaded on the website, and its text version is distributed by email to the list of subscribers comprising: ADRC counterparts, 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 conducted, and participants in international conferences which ADRC took part. ADRC also registers e-mail addresses of those who wish to subscribe the newsletter upon the receipt of request e-mail. ADRC has been updating its mailing lists in order to deliver the newsletter more effectively and efficiently to readers.

As of 28 February 2021, the numbers of subscribers to the ADRC Highlights were 2,319 for English version, 200 for Russian version, and 894 for Japanese version. 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. As ADRC could not conduct its activities in a normal format this year due to the global pandemic, the ADRC Highlights included various new topics including letters from former VRs regarding COVID-19 related situations in their countries, as well as participation in online seminars, introducing ADRC's online resources on COVID-19 in Asia, and ACDR2020.

3.2.2. Sharing of GLIDE Numbers

As mentioned in section 2.4, GLIDE is a disaster identifier system that is commonly formatted but has unique numbers assigned to every disaster. ADRC disseminates detailed information about disaster through GLIDE.
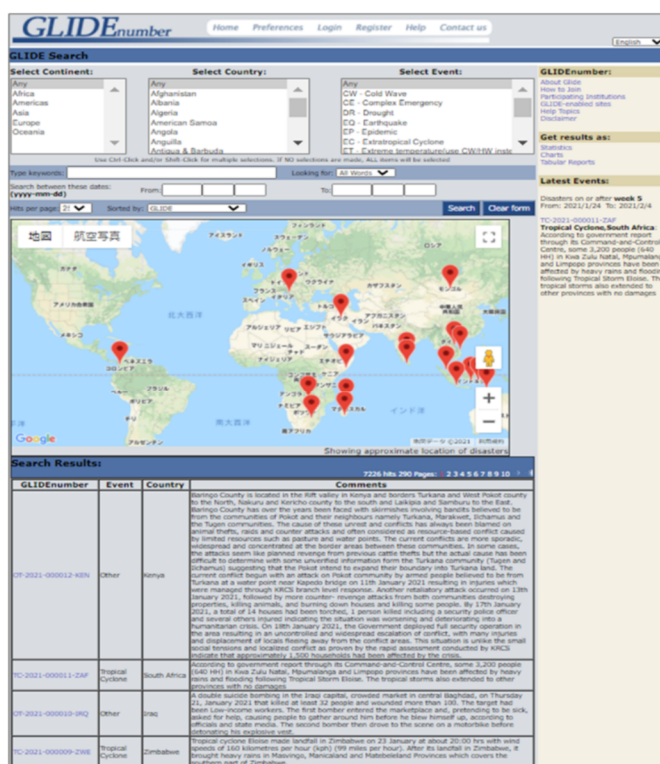

Figure 3.10. GLIDE Information

GLIDE numbers (e.g., EQ-2021-000003-IDN) are hyperlinked to detailed information such as situation reports shared by relevant organizations. It also links to country information which contains data, such as trends of natural disasters and disaster management system. The information is regularly updated with the original links, and shared to the users.

3.2.3. Data sharing through Sentinel Asia's Platform

In the event of a disaster, it is important to be able to quickly assess the disaster area for emergency response. For this reason, the use of earth observation satellites to analyse the disaster area and provide data to the local community is useful and effective. This is why ADRC continues to participate in the Sentinel Asia project, which 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 space agencies that participate in the Sentinel Asia Project, namely: ISRO (India), JAXA (Japan), GISTDA (Thailand), NARL (Taiwan), CRISP (Singapore), MBRSC (United Arab Emirates).
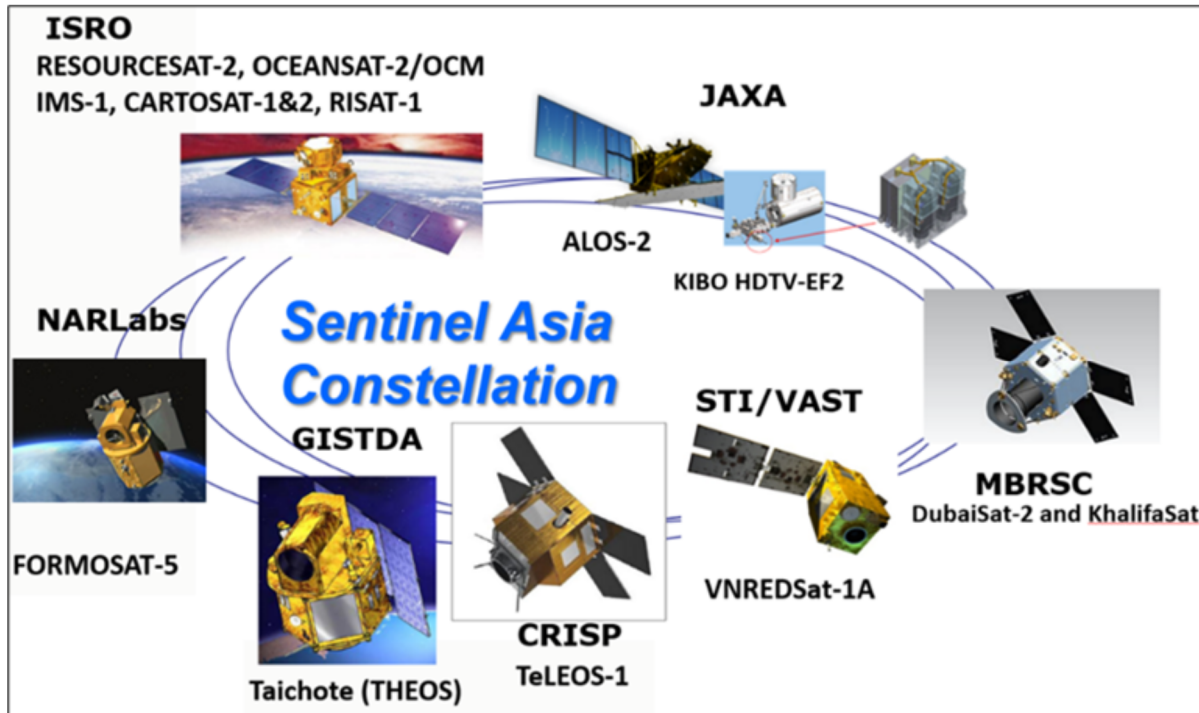

Figure 3.11. Data Provider Nodes of Sentinel Asia

As of January 2021, 111 organizations from 28 countries and region joined Sentinel Asia. In spite of 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. From January to December 2019, 28 emergency observations were requested, 25 of which were undertaken after the operation of ALOS-2 (succeeding satellite of ALOS) which started in November 2014. In FY 2020, Sentinel Asia received 28 requests from JPT members and 28 were activated (Figure 3.12).
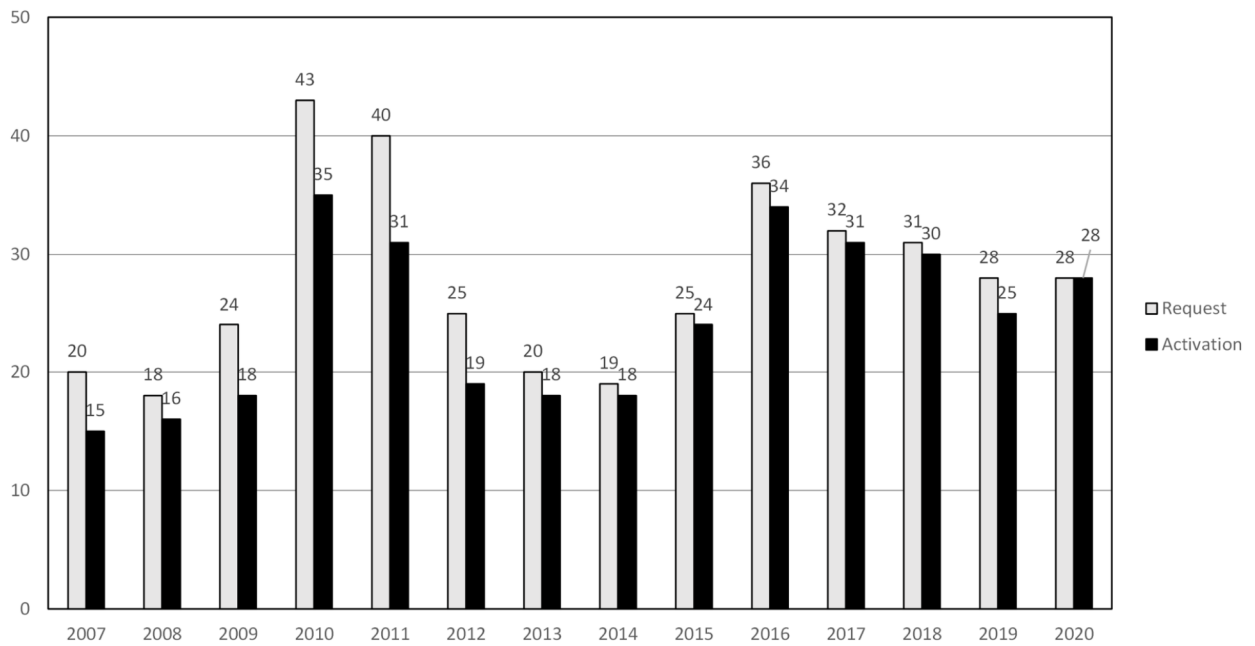
Figure 3.12. Emergency Observations 2017-2020

3.2.4. Sharing Information at Conferences and Events

ADRC actively participate in related global, international, regional, and national conferences and learning events to disseminate disaster risk reduction information. Some of these events are highlighted in section 5.2.

4. Human Resource Development

4. Human Resource Development

To enhance disaster risk management (DRM) capacities in member countries, ADRC promotes human resources development (HRD) through the Visiting Researchers (VR) programme, seminars, workshops, and training events on disaster risk reduction (DRR) .

4.1. Visiting Researchers (VR) Programme

Since 1999, ADRC has been implementing the Visiting Researchers (VR) programme with the participation of select officials from member countries. As of 22 February 2021, the total accumulated number of visiting researchers reached 117 from 27-member countries (Table 4.1). The objectives of the programme are:

- To accumulate knowledge on latest disaster information, disaster management policy, laws, plans and budget of member countries to help strengthen their disaster resilience

- To analyze policies through collection and survey of good practices of DRR measures of member countries

- To develop effective capacity development programmes and tools based on needs and priorities of VRs and their countries

- To continue improving the VR programme based on their feedback

Table 4.1. Total Accumulated Number of VRs FY2020

Azerbaijan	2
Armenia	8
Yemen	3
Iran	1
India	6
Indonesia	4
Uzbekistan	2
Cambodia	4
Kyrgyz	2
Sri Lanka	11
Korea	3
Thailand	10
Tajikistan	2
China	3

Turkey	1
Nepal	9
Bangladesh	5
Pakistan	5
PNG	1
Philippines	9
Bhutan	3
Vietnam	4
Malaysia	4
Myanmar	4
Maldives	4
Mongolia	5
Lao PDR	2
Total	**117**

4.1.1. Activities

In this programme, selected visiting researchers (VRs) collaborate with ADRC for few months, and are oriented with the state of knowledge and technology on DRR. VRs also learn the international cooperation activities of Japan at ADRC. This programme expects VRs not only to contribute towards strengthening the DRR capacity in their countries, but also to further promote cooperation between their countries and ADRC.

In FY2020, selected VRs from India, Bangladesh, Thailand and Myanmar (Figures 4.1 to 4.2) could not come to Japan for their on-site activities due to COVID-19 pandemic. So, most of the activities (e.g., discussions of their research themes, country presentations, and lectures) were held online (Figure 4.3).

	Name	Country	Position	Organization
Mr.	Deepak Bamoriya	India	Deputy Commandant	National Disaster Response Force (NDRF)
Mr.	Abdul Quader	Bangradesh	Deputy Secretary	Ministry of Disaster Management and Relief (MoDMR)
Ms.	Thanyalakmetha Sophia	Thailand	Plan and Policy Analyst, Professional Level	DDPM
Ms.	Tun Mi Mi	Myanmar	Assistant Director	Department of Disaster Management (Nay Pyi Taw)

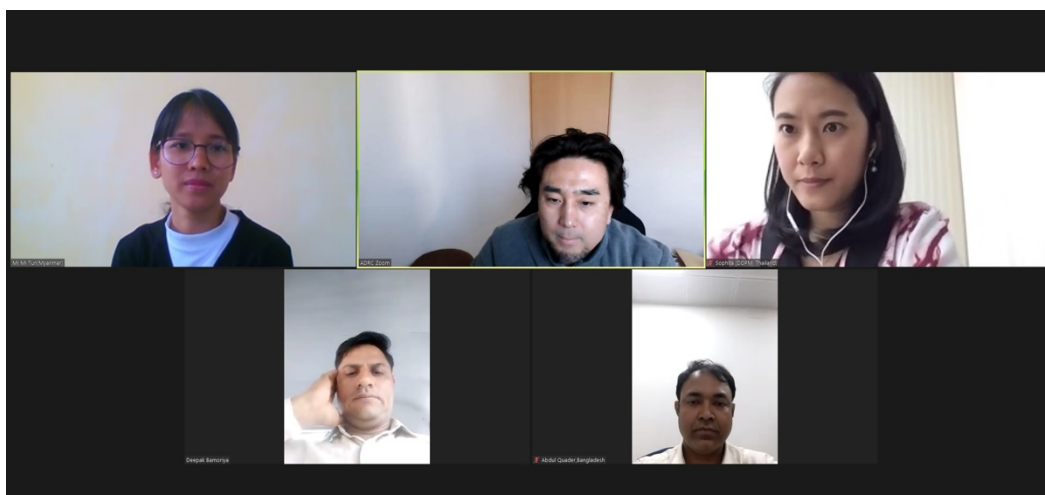Figure 4.1. Names of Visiting Researchers FY2020

Figure 4.2. Visiting Researchers FY2020

Schedule of VR online-programe for FY2020

21-Feb Sun	22-Feb Mon		23-Feb Tue	24-Feb Wed	25-Feb Thu	26-Feb Fri	27-Feb Sat
	(Ogawa/Nakagawa/Ikeda) Explanation about VR programme				Ikeda ADRC Activity		
28-Feb Sun	1-Mar Mon	2-Mar Tue	3-Mar Wed	4-Mar Thu		5-Mar Fri	6-Mar Sat
		Ikeda Interview about research plan * to decide each mentor		Nakagawa Disaster Management in Japan			
7-Mar Sun	8-Mar Mon	9-Mar Tue	10-Mar Wed	11-Mar Thu		12-Mar Fri	13-Mar Sat
		Ikeda / mentors Presentation about research plan (VRs), and Discussion		Kodama Promotion of DRR Education in Schools			
14-Mar Sun	15-Mar Mon	16-Mar Tue	17-Mar Wed	18-Mar Thu		19-Mar Fri	20-Mar Sat
		Shiomi Disaster Information -A GLobal IDEntifier number (GLIDE)-		Nakamura Raising Disaster Awareness for people			
21-Mar Sun	22-Mar Mon	23-Mar Tue	24-Mar Wed	25-Mar Thu		26-Mar Fri	27-Mar Sat
		Saito Gender perspectives in disaster management		Gerry Integrating "Pre-Disaster Recovery Planning" in DRR Plan			
28-Mar Sun	29-Mar Mon	30-Mar Tue	31-Mar Wed	1-Apr Thu		2-Apr Fri	3-Apr Sat
		Ikeda Summerize of online lecture Explanation about next step					

Figure 4.3. Online Lectures for VRs FY2020

4.1.2. Feedback from Visiting Researchers

Among the common feedback from VRs about the program are:

• Duration of the programme is appropriate and sufficient

• Contents of lectures and on-site activities are of great benefit, especially the opportunity to visit various disaster management organizations (e.g., Cabinet Office, Japan Meteorological Agency, and local governments)

• Sharing of practical researches/exercises are useful

• Participation in international meetings and exchanging opinions with experts are beneficial

• Networking among former and current VRs is valuable (organizing VR reunion is recommended)

All former VRs comprise a network that belongs to a wider ADRC family, such that they link with one another and continually support the activities of ADRC in various ways. As mentioned in section 2.2.1., current and former VRs wrote reports about the challenges in preventing the spread of COVID-19 infection to facilitate knowledge sharing. Moreover, during the Asian Conference on Disaster Reduction (ACDR) 2020, some visiting researchers contributed by serving as resource speakers (Figure 4.4).
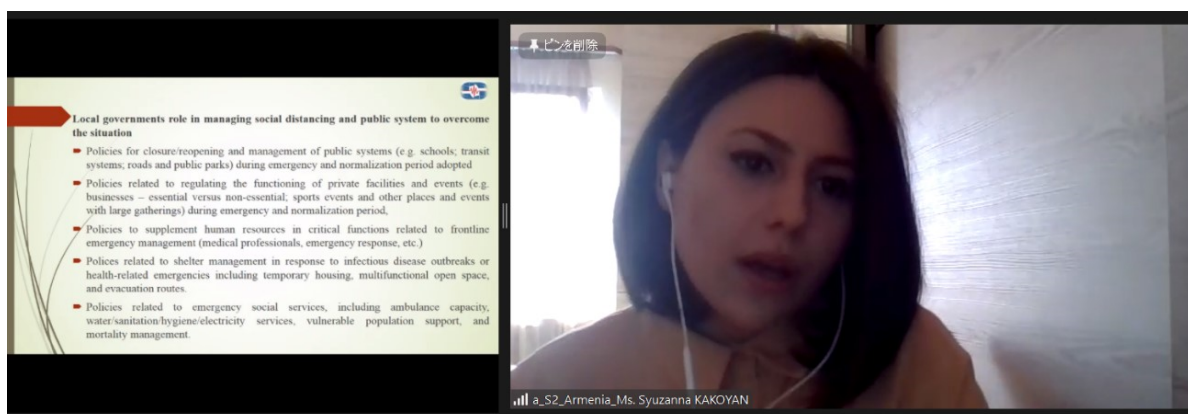

Figure 4.4. Presentation by Ms Syuzanna Kakoyan, VR 2016

4.2. Seminars and Training Courses

ADRC implements some JICA training courses, which are based on themes expressed by region or country that benefit the training. In FY 2020, the courses included: Comprehensive Disaster Risk Reduction (CDRR); CDRR for Latin America; and Promotion of Mainstreaming DRR. After the training, participants are expected to gain more knowledge in promoting DRR in their countries.

4.2.1. JICA Comprehensive Disaster Risk Reduction (CDRR) Course

Held on 12 January 2021 to 8 February 2021, ADRC conducted a Comprehensive Disaster Risk Reduction course for four participants (1 from Afghanistan, 2 from Nepal, and 1 from Pakistan). Due to the COVID-19 situation, the training was held online, focusing on developing a Local Disaster Risk Reduction (DRR) Plan. The main subject, "8 STEPS: Practical Method for Developing Local DRR Strategies/Plans", originally developed by JICA, was facilitated and supported by ADRC during the course. After learning the method, the participants formulated and presented the Local DRR Plan tailored to their own countries. It is hoped that the method of developing the Local DRR Plan will be promoted at their own countries after this program, contributing to their implementation of SFDRR Global Target E: Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.
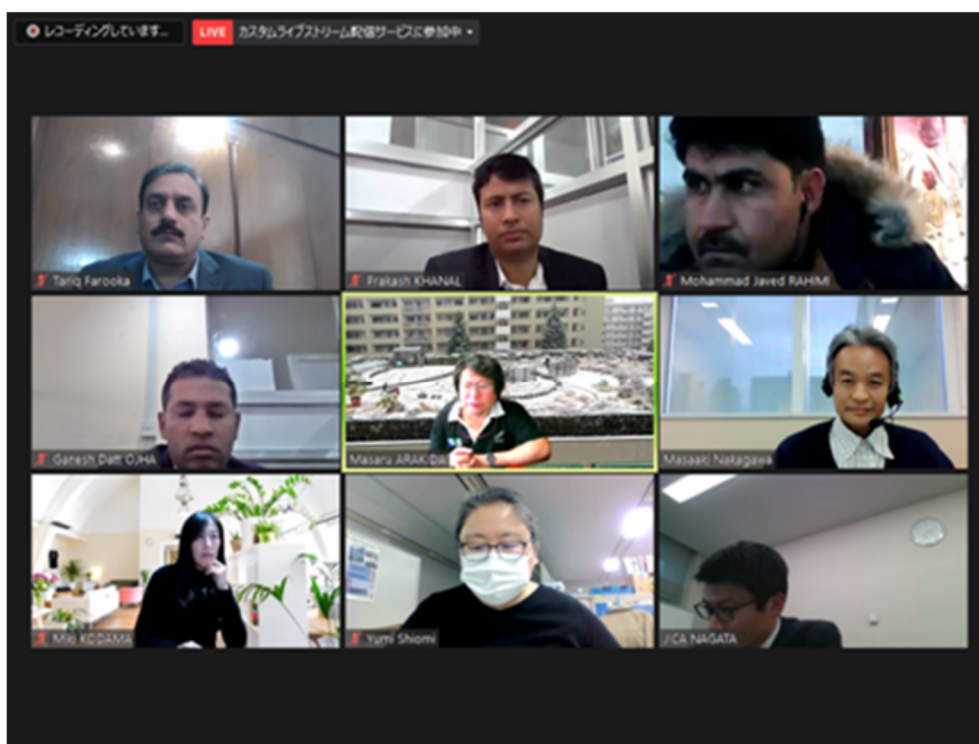

Figure 4.5. Virtual Training on CDRR

4.2.2. JICA CDRR Course for Central and South America

Another comprehensive disaster risk reduction (CDRR) course was conducted for participants in Central and South America held on 29 January 2021 to 26 February 2021. A total of 12 officials from 8 countries participated in this course, where sessions were conducted online – early morning in Japan and evening in Latin American countries. One of the key topics covered was the development of effective Disaster Risk Reduction Strategies (DRR Strategies). The process included watching pre-recorded video materials, discussions, and experience sharing.
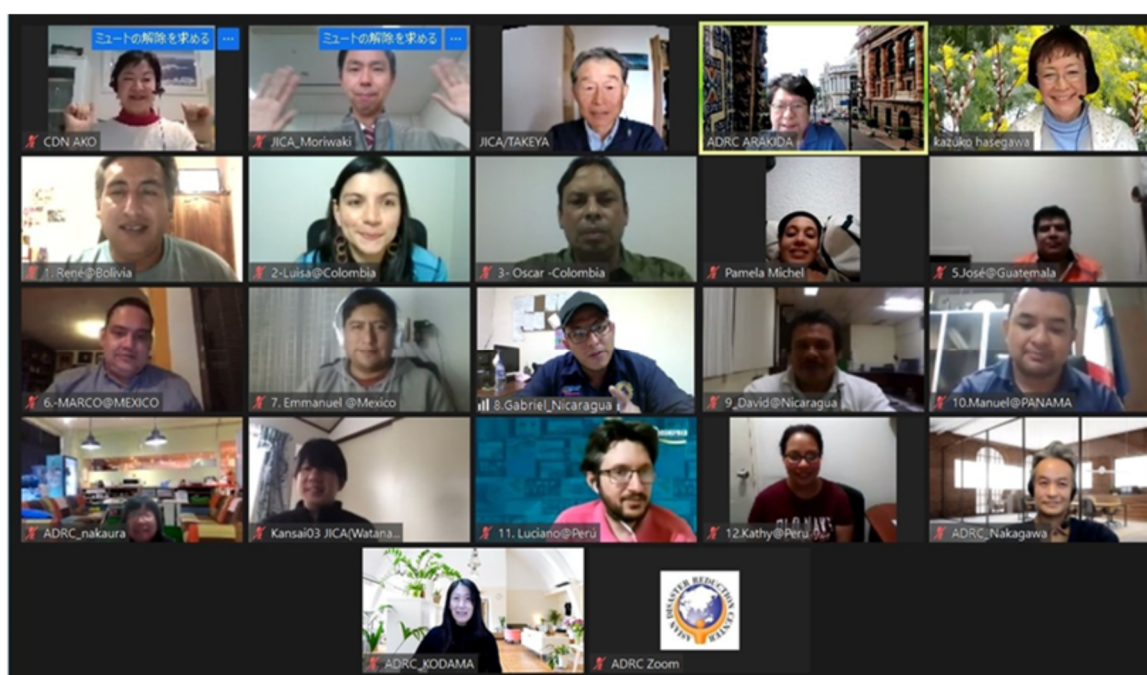

Figure 4.6. CDRR for Central and South America

4.2.3. JICA Knowledge Co-Creation: Promotion of Mainstreaming DRR

Furthermore, ADRC implemented the "JICA Knowledge Co-Creation Program: Promotion of Mainstreaming Disaster Risk Reduction" on 9-19 March 2021 to participants from Bangladesh, Mongolia, Nepal, and the Philippines. The discussions put emphasis on lessons and effective approaches to mainstreaming disaster risk reduction efforts.
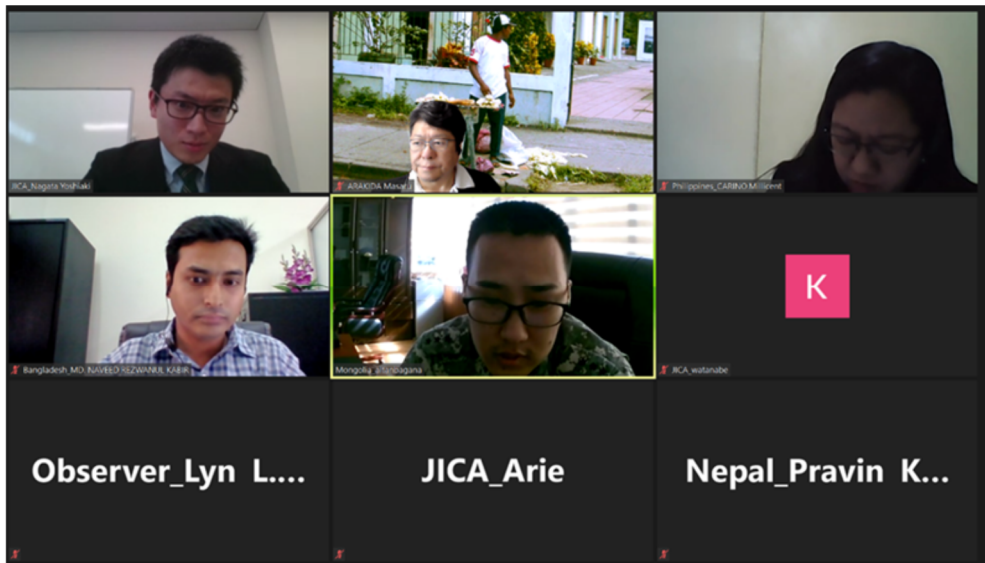
Figure 4.7. Mainstreaming DRR Course

4.3. Short Training

Few online short training activities were also conducted in FY 2020. On 2 September 2020, ADRC and the University of Tokyo virtually organized a sharing experiences on improving disaster education (Figure 4.8). Outcome of this activity included the expression of mutual interest in conducting a localized programme based on the opinions of residents (e.g., organizing evacuation drills for students, teachers, and community).

Figure 4.8. Virtual event with students from the University of Tokyo

In addition, on 27 January 2021, ADRC virtually organized an experience sharing activity with students from Hosei University. In this event, ADRC shared lessons on promoting seismic-resistant houses and buildings in Indonesia as well as the importance of "town watching" as practical tool to enhance community resilience to disasters (Figure 4.9).

Figure 4.9. Virtual Event with Students from Hosei University

5. Cooperation and Partnerships

5. Cooperation and Partnerships

ADRC forges cooperation and partnerships among member countries and partner organizations to advance disaster resilience.

5.1. Mobipack Project in Himachal Pradesh

To promote the use of innovative tools and technology in disaster risk management, ADRC and the University of Tokyo jointly initiated a pilot project on Mobipack in Himachal Pradesh, India with funding support from the World Bank.

5.1.1. Project Description

Whenever a mobile phone subscriber sends a message or makes a call, his or her location is indicated in the call detail record (CDR), which the telecommunications companies store in their databases. Mobipack (an open-source software) can access and process the CDR data from the telecommunications company. Mobipack can visually show on a dashboard of a computer screen people's movement in near real-time (Figure 5.1. Visualisation of People's Movement). This data could help inform the disaster risk management (DRM) agency's decision to take appropriate actions, such as: (i) issuing early warning to people going to hazardous locations, (ii) monitoring disaster hotspots and infection outbreaks, (iii) informing evacuation operations, and (iv) informing the distribution of relief goods and supplies. The Himachal Pradesh State Disaster Management Authority (HP-SDMA) will be coordinating the installation of Mobipack in local telecommunications companies, covering the entire 12 districts.

Figure 5.1. Visualisation of Movement Using Mobipack

5.1.2. Partners and Collaborators

The University of Tokyo is the technical partner of ADRC for this project. In its implementation, the project engages HP-SDMA of India and collaborating with the following organizations: (i) Department of Telecommunications, Government of Himachal Pradesh; (ii) Mobile Network Operators; (iii) Telecommunications Regulatory Authority of India (TRAI); (iv) Resilience Innovation Knowledge Academy (RIKA-India); (v) IIT-Hyderabad; and (vi) Asian Disaster Preparedness Center (ADPC). The collaboration is focused on implementing the following core activities: setting-up the data pipeline, setting-up the analytical pipeline, assessing the Mobipack enhancement that is tailored to the needs HPSDMA, and organizing lessons learned workshop.
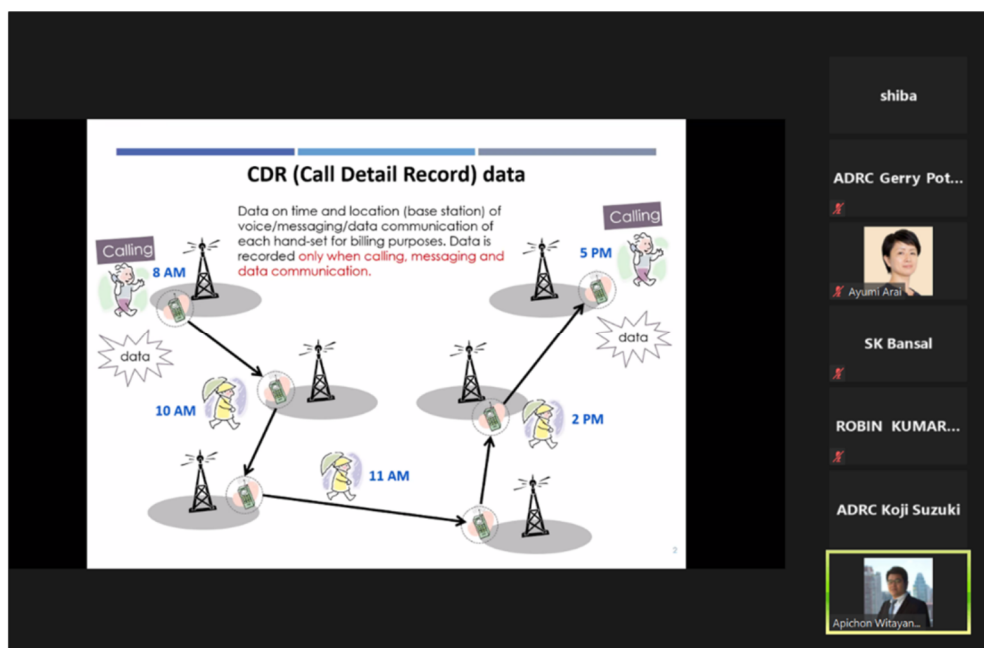

Figure 5.2. Virtual Meeting Among Partners

5.2. Networking and Engagement

Most of ADRC engagements during FY 2020 were conducted virtually due to COVID-19 pandemic.

5.2.1. APEC-EPWG

On 21 July 2020, ADRC virtually participated in the 16th Meeting of APEC Emergency Preparedness Working Group (EPWG). ADRC Project Director Mr SUZUKI Koji, co-chair of the EPWG, moderated one of the sessions. Mr NAKAGAWA Masaaki (Executive Director) Mr

Gerald Potutan (Senior Researcher) and Ms SHIOMI Yumi (Senior Researcher) also participated. Agenda included reporting from APEC economies on DRR measures during COVID-19 pandemic, ongoing projects, and future plans of EPWG. Mr SUZUKI presented an "Update on EPWG initiative on sharing of information in responding to COVID-19". Mr Potutan presented the report on DRR Measures during the Pandemic on behalf of Japan economy. In the meeting, EPWG agreed to continue to address the issues related to the COVID-19 pandemic in cooperation with other APEC fora.

Figure 5.3. Screenshot of EPWG-16 Meeting

5.2.2. ASEAN

Engagements with the ASEAN included:

- **High-Level Symposium** on Disaster Management 2020 held at ASEAN Secretariat in Jakarta, Indonesia on 26-27 February 2020. The symposium was organized by ASEAN Secretariat and supported 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. ADRC shared information on disaster data development and methodologies in ASEAN countries. Panelists regarded accuracy and coverage of disaster data as challenging regardless of disaster phase or activity field throughout the symposium. Also, the application of GLIDE to their work was suggested for future solution.

- **Discussions on use of QZSS** for disaster management with AHA Centre in Jakarta, Indonesia on 3 March 2020. Together with partners from Asia Air Survey and CTI Engineering International, ADRC met with Mr Siva Balan (Director for Operations) and other AHA Centre officials in Jakarta. The meeting explored the possibility of applying a constellation of Japanese Satellites' positioning service (QZSS) as emergency information platform. The key feature of this platform is that it can send text and voice messages to a receiver. By using an application to decode the sent messages, communities can receive the information even in the absence of telecommunication infrastructure, telephone networks, or Wi-Fi. This platform is valuable to communities in mountainous areas, island communities, or areas where telecommunication infrastructure is limited. AHA Centre officials recognized the added value of this emergency information platform, especially for Cambodia, Lao PDR, Myanmar, and Vietnam (CLMV), as these ASEAN member countries have limited capacities in disaster forecasting and early warning.

Figure 5.4. Meeting at AHA Centre, Jakarta

5.2.3. SAARC/Nepal

On 25-29 February 2020, ADRC engaged in three different activities during the visit to Nepal. Firstly, ADRC Executive Director, along with researchers from JICA Tohoku Center and University of Hyogo, met with Mr Sushil Gyewali, CEO of National Reconstruction Authority (NRA) and other officials. The meeting discussed the joint research project on Modeling Disaster Recovery Governance in Asia. Mr Gyewali explained the process as well as the progress of recovery from the 2015 Gorkha Earthquake. He reported that as of

December 2019, 85% of all projects were completed. During the field visits, the team learned that NRA utilizes 'User Committees' to reconstruct completely damaged heritage sites (e.g., Ranipokhari). NRA also promotes 'Integrated Settlements' in reconstructing private houses (e.g., Ward 12 in Melamchi). Since NRA will be dissolved in the end of 2020, its functions will be transferred to the National Disaster Risk Reduction and Management Authority (NDRRMA) - a newly established agency. Secondly, ADRC, in collaboration with experts from Asian Institute of Technology (AIT) and GeoThings, organized a workshop on the 'Utilization of ICT to Strengthen Disaster Resilience'. In this workshop, GeoThings demonstrated the functions of 'geoBingAn' - a social media Apps that functions to report personal safety and simple assessments (e.g., building damage) following a disaster. Thirdly, ADRC coordinated other separate meetings with SAARC Secretariat, NDRRMA, Planning Ministry, and JICA Nepal.

Figure 5.5. Meeting at SAARC Headquarters in Kathmandu

5.2.4. Sentinel Asia

As member, ADRC participated in the regularly monthly meeting of the Sentinel Asia in FY 2020. At the meeting, ADRC mainly reported the latest Emergency Observation Requests it received and provided details (Fig 5.1). ADRC also participated in the following events:

- *International Disaster Charter Board Meeting*, 11 November 2020, which was organized online. In this meeting, space agencies from the IDC member countries provided updates on the latest DRR activity. ADRC functions as a Regional Support Office (RSO) in the

IDC framework. When ADRC receives an emergency observation request for Sentinel Asia, ADRC escalates that request to IDC if asked to do so by the agency making the request. Sentinel Asia targets Asian countries, but the IDC provides worldwide support in case of a more catastrophic disaster. ADRC has escalated 49 cases to IDC since 2011. At this conference, ADRC proposed that a more robust network be developed.

UTC 11:00		Start of Meeting	
11:00	1) 1a) 1b) 1c)	Welcome Note by JAXA Current Lead Agency Previous Lead Agency Next Lead Agency	JAXA JAXA CNSA ISRO
11:10	2)	Approval of Agenda	All
11:15	3)	Approval of the 43rd Board Minutes	CNSA, CSA, All
11:20	4)	Review of Board Action Items	JAXA
11:40	5)	Activity Report Status of annual report 2019	CNSA CNES
12:10	6)	Sentinel Asia Report	JAXA, ADRC
12:25	7)	Universal Access Update	CNSA, All
12:35	8)	The 20th Charter Anniversary Meeting and Events	CNSA, JAXA, INPE, All
12:45	9)	Discussion on UNITAR's new request – status update other issues on collaboration with UNOOSA and UNITAR – Their Annual Report	JAXA, ESA, CNSA, CNES, All
13:00	10)	Charter Processing Environment – Operations Concept Note (Report from ES)	ESA, ISRO, All
13:20	11)	Charter Membership and Integration Status 11a) Discussion on Belarus, Kazakhstan Application 11b) Acceptance Procedure Update	ESA, CSA All
13:35	12)	GEO engagement – status update	JAXA, CNSA, ROSCOSMOS, UKSA, All
13:50	13)	AOB	CNES
13:55	13)	Lead Agency Turn and Further Planning	CNSA
14:05	14)	Review of 2020 – 2021 Work Plan	JAXA, All
14:15	15)	15a) Date of mid-term Board Teleconference 15b) Next Lead Agency and Date/Time of the Next Meeting	JAXA, All ISRO
14:25		Closure of Charter Online Meeting	

Figure 5.6. IDC Board Meeting Agenda

- *UN International Conference on Space-based Technologies for Disaster Risk Reduction*: *Lessons Learned during an Unprecedented Pandemic*, 24-25 November 2020, which was held online. This conference was organized by the Beijing office of the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER), a UNOOSA programme. At this conference, ADRC Project Director Mr SUZUKI Koji gave a presentation entitled "Sentinel Asia Activation for a Flood Disaster in Japan during the COVID-19 Outbreak." This presentation mentioned how space-based technologies were effectively employed to better mitigate this disaster under the challenging conditions posed by the pandemic.

Day 1, 24 November 2020	
09:00-11:00 (Central Europe), 15:00-17:00 (Bangkok), 02:00-04:00 (Chicago, USA)	
Opening session	
Simonetta Di Pippo Director of the UN Office for Outer Space Affairs (UNOOSA)	
Shirish Ravan Head UN-SPIDER Beijing Office	Context setting
Session 1: Lessons learned during an unprecedented pandemic situation	
Chair	Shirish Ravan, UNOOSA
Sanjay Srivastava Chief, Disaster Risk Reduction, United Nations Social and Economic Commission for Asia and the Pacific, Thailand	Disaster risk reduction and Covid-19 situation – changing policy perspective
Koji Suzuki Executive Director, Asian Disaster Reduction Center (ADRC) Japan	Critical support of Sentinel Asia during the flooding in the southern Japanese island of Kyushu in the midst of Covid-19 outbreak
Titus A. Kuuyuor (Ph.D.) Senior Resilience Advisor, United Nations Development Programm, Ethiopia	--------
[name] NDRCC/MEM - China	Contribution from space to tackle major disasters in China during the challenging time of Covid-19 outbreak
Krishna Vatsa Member, National Disaster Management Authority, India	Efforts to mitigate impact of floods and cyclones in India during the 2020 pandemic

Figure 5.7. Conference Agenda

5.2.5. UNDRR

On 1-2 December 2020, ADRC participated in the United Nations Office for Disaster Risk Reduction (UNDRR) *Asia-Pacific Partnership for Disaster Risk Reduction Forum*, which was held online. More than 150 representatives of government organizations and related organizations from Asian countries participated the Forum.
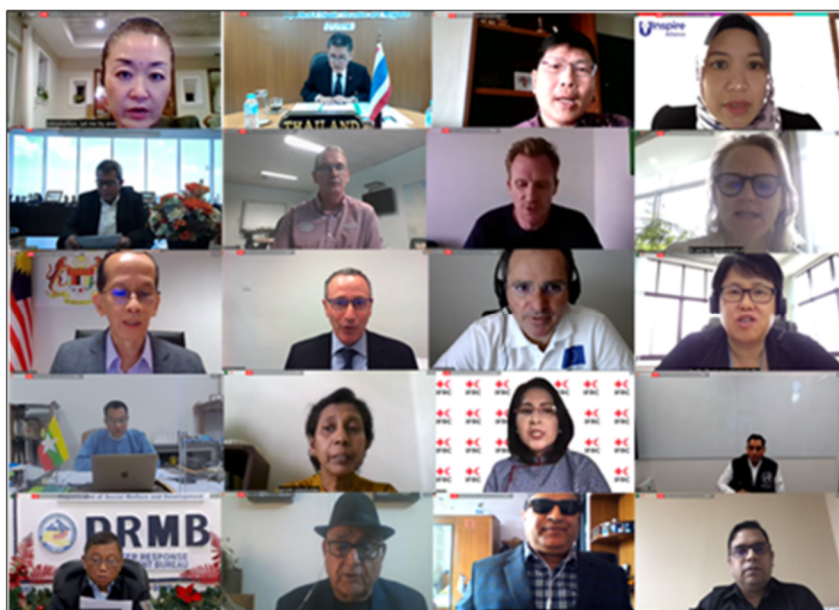

Figure 5.8. Screenshot of UNDRR Virtual Forum

5.2.6. ESCAP/WMO: Typhoon Committee

With regard ESCAP/WMO Typhoon Committee activities, ADRC engaged in the following:

- 52nd Session of the ESCAP/WMO Typhoon Committee

On 10 June 2020, ADRC participated in the session as observer. The Session constituted of reports from Typhoon Committee Secretariat, Working Group on Meteorology (WGM), Working Group on Hydrology (WGH), and Working Group on DRR (WGDRR). Japan Meteorological Agency made a report on the activities of Regional Specialized Meteorological Center (RSMC). In particular, the 2019 Typhoon Season summary was reviewed. It was reported that out of 29 named tropical cyclones (TCs) formed, 18 reached typhoon (TY) intensity. In the Session, the Typhoon Committee agreed to retire the names of the seven typhoons among them which brought about serious damages and to replace new ones.
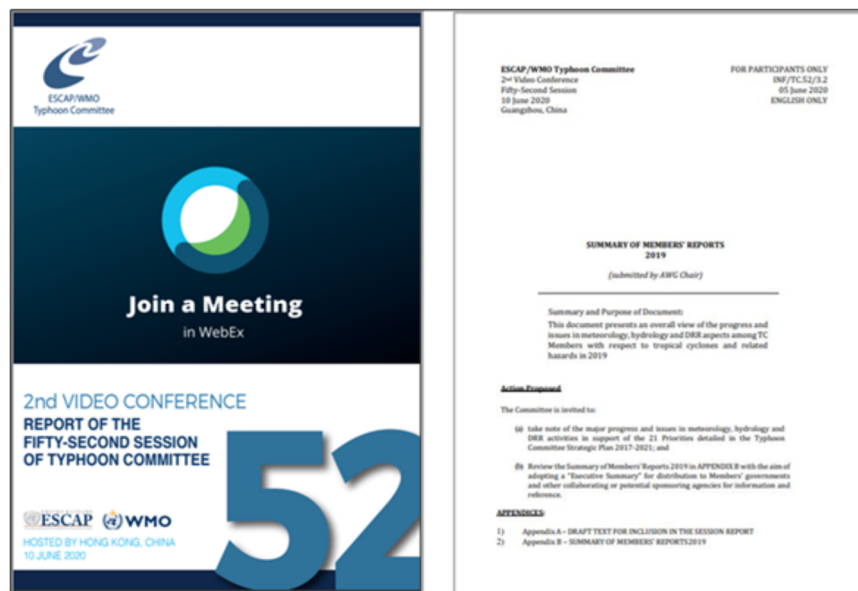

Figure 5.9. Screenshot of Session Materials

- 15th Integrated Workshops of the Typhoon Committee

On 1-2 December 2020, Vietnam hosted the Fifteenth Integration Workshop (IWS) of ESCAP/WMO Typhoon Committee. ADRC Senior Researcher Mr Gerald Potutan delivered a keynote speech titled "Disaster Response Amidst COVID-19: Lessons from recent typhoons in three ADRC member countries." The presentation highlighted the respective activities of the Disaster Risk Management (DRM) agencies in the Philippines, India, and the Republic of Korea in responding to recent typhoon disasters on top of COVID-19 pandemic. In addition to restrictions of people's movement, health protocol requirements of social distancing and face

coverings, DRM agencies introduced various new response measures such as taking measures at evacuation centers.
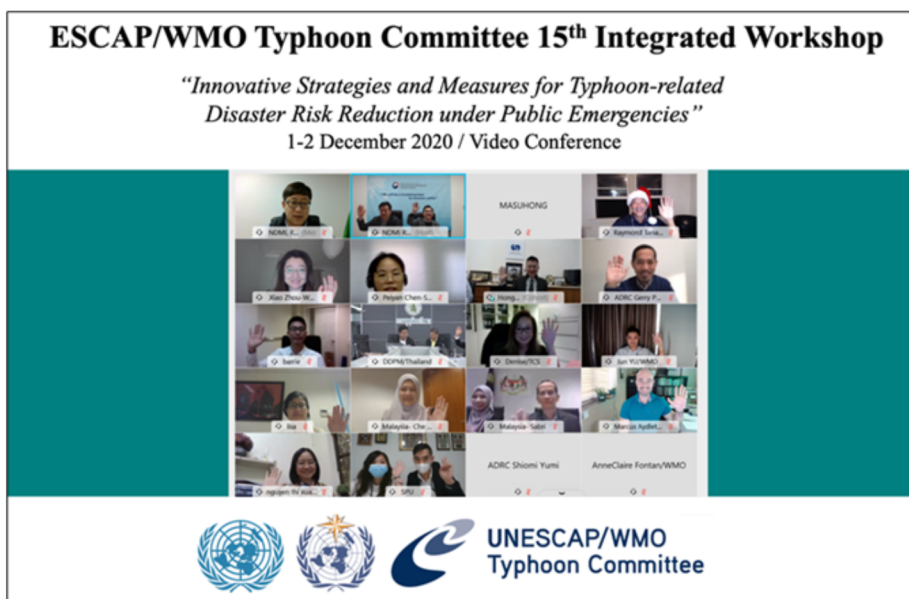

Figure 5.10. Participants of 15th IWS

- 53rd Session of the ESCAP/WMO Typhoon Committee

On 23-25 February 2021, Japan Meteorological Agency (JMA) hosted the Fifty-Third Session was hosted, and ADRC participated as observer. The Session began with JMA's 2020 Typhoon Summary report and constituted of reports from Typhoon Committee Secretariat, Working Group on Meteorology (WGM), Working Group on Hydrology (WGH), and Working Group on DRR (WGDRR). Members and participants actively discussed the activities, plans and schedules. During this session, PR China's proposal for the establishment of TC Collaborative Research Center was approved.

Figure 5.11. Participants of the 53rd Session

6. International Recovery Platform

6. International Recovery Platform

As a pioneering member of the International Recovery Platform (IRP), ADRC supports IRP activities, including co-hosting the IRP Secretariat in Kobe, Japan.

6.1. Overview

IRP was established following the Second UN World Conference on Disaster Reduction in Kobe, Hyogo, Japan in 2005 to support the implementation of the Hyogo Framework for Action (HFA) by addressing the gaps and constraints experienced in the context of post-disaster recovery. After a decade of functioning as an international source of knowledge on good recovery practice, IRP refocused its role as an "international mechanism for sharing experience and lessons associated with build-back-better".

IRP is not an operational body. So, it does not directly implement project activities. Instead, it functions as a platform for interested partners to periodically meet to exchange lessons and ideas that will promote recovery best practice and learnings as well as capacity building. Its activities are governed by a Steering Committee and supported by a small Secretariat based in Kobe Japan and hosted by the Japanese Government, the Hyogo Prefectural Government, ADRC, and UNDRR.

IRP works towards supporting greater advancements in the field of resilient recovery and build-back-better by:

- bringing together a broad range of senior policy makers and practitioners to exchange experiences and facilitate discussion on resilient recovery challenges and build-back-better opportunities at the annual International Recovery Forum

- advocating for closer cooperation with development partners, regional intergovernmental organizations, regional organizations, and regional platforms for disaster risk reduction in promoting and building capacity for achieving effective build-back-better outcomes

- sharing of information through its inter-active website

IRP is governed by the Steering Committee, where membership is decided by consensus. Steering Committee members contribute towards the approved activities of IRP, by means of commitment of funds or in-kind contributions. The Steering Committee members can request the Chair for technical experts or specialist to attend meetings on an ad-hoc basis to provide specialist inputs as and when deemed necessary. The members of IRP Steering Committee are: ADB, ADRC, Cabinet Office Japan, CEPREDENAC, Hyogo Prefectural Government Japan, ILO, MOFA-Italy, SDC-Switzerland, the World Bank, UN-

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Environment, UNCRD, UNDP, UNESCO, UN-Habitat, UNDRR, UNOPS, and WHO (Figure 6.1. Logos of IRP SC members)

Figure 6.1. Logos of IRP SC Members

6.2. Activities

In 2020 and early 2021, IRP/ADRC implemented a range of activities to advance its goals in the fields of resilient recovery and build-back-better.

6.2.1. International Recovery Forum 2021

Annually, in January, IRP organizes the International Recovery Forum (Forum) to exchange experiences and facilitate discussion on challenges to resilient recovery, and opportunities for building back better. The online Forum was held in a hybrid modality on 22 January 2021, on the theme, "Building Back Better from Compound Disasters: Practical Cases and Lessons for Recovery from Natural Hazards and COVID-19". Attended by 340 participants from 49 countries, the Forum featured keynote presentations and panel discussions on early lessons learned in recovery, and opportunities to build back better, greener, more equitable and resilient from COVID-19 and compound disasters.

As a global health crisis, COVID-19 has undoubtedly impacted many aspects of society and the economy. The unprecedented socioeconomic impacts that it has caused have undermined development progress and threatened the achievement of the Sustainable Development Goals. Simultaneously, countries are confronted by the challenges of managing compound risks from the COVID-19 pandemic and natural hazards. In view of this, the Forum organized two panel discussions that aim to achieve two objectives:

The first objective is to examine priorities and opportunities to build back better, greener, and more resilient from COVID-19 and compound disasters. Panelists discussed strategies for building back better, greener, and more resilient from the COVID-19 pandemic and natural hazards. Discussions included consideration for institutional, financial, and implementation support for launching a green and resilient recovery while balancing immediate recovery

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needs and goals with priorities for longer-term resilience. Speakers reflected on lessons from recent and past recovery experiences that can inform priorities and opportunities to build back better.

The second objective is to assess social and economic impacts and identify early lessons learned for sustainable recovery from pandemics and compound disasters. Panelists delved into cases and early lessons learned for recovery from disasters in countries most affected by the pandemic and natural hazards. It provided insights from assessing social and economic impacts, as well as planning and financing a sustainable recovery. It addressed key issues for vulnerable groups, and consider measures for managing compound risks from the pandemic and natural hazards.

Speakers at the opening session included Mr Jared MERCADANTE, Chair of the IRP Steering Committee (World Bank), Mr OKONOGI Hachirou Minister of State for Disaster Management, Government of Japan, and Mr IDO Toshizo, Governor of Hyogo Prefecture. The keynote speakers were Mr KAWATA Yoshiaki, Executive Director of the Disaster Reduction and Human Renovation Institution (DRI) and Mr Stéphane HALLEGATTE, Lead Economist, Global Facility for Disaster Reduction and Recovery (GFDRR), World Bank. Ms MATSUOKA Yuki, Head, UNDRR Office in Japan moderated this keynote session.

Members of the first panel discussions were Ms Maria Alejandra MUÑOZ SEMINARIO, Vice President, Government of the Republic of Ecuador; Ms Bambi KRAUS, National Tribal Affairs Advisor, Federal Emergency Management Agency, Government of the United States of America; Mr Vijay PADMANABHAN, Director, Urban Infrastructure, Southeast Asia Department, Asian Development Bank; and Mr Joy ELAMON, Director General, Kerala Institute of Local Administration. Ms Rita MISSAL, Recovery Advisor, Disaster Risk Reduction and Recovery for Building Resilience Team, United Nations Development Programme (UNDP) moderated this panel. Members of the second panel discussions were Mr Malcolm DALESA, PDNA and Recovery Strategy Coordinator, Department of Strategic Policy, Planning and Aid Coordination, Office of the Prime Minister, Government of Vanuatu; Mr Ronald JACKSON, Head, Disaster Risk Reduction and Recovery for Building Resilience Team, UNDP; Mr Mark JOVEN, Undersecretary, Department of Finance, Government of the Philippines; and Ms Bernadia Irawati TJANDRADEWI, Secretary General, Asia-Pacific, United Cities and Local Governments (UCLG). Ms Paola ALBRITO, Chief of Branch, Intergovernmental processes, Interagency Co-operation and Partnerships, United Nations Office for Disaster Risk Reduction (UNDRR) moderated this panel.

Figure 6.2. Speakers of the International Recovery Forum 2021

Finally, the Speakers at the closing session were Ms MIZUTORI Mami, Special Representative of the United Nations Secretary-General (SRSG) for Disaster Risk Reduction, Head of the United Nations Office for Disaster Risk Reduction (UNDRR) and Mr MURAKAWA Soshi, Director, Cabinet Office, Government of Japan, on behalf of Co-Chair of the IRP Steering Committee.

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Key Messages from the Forum

- **Risks** cannot be treated in isolation. A multisectoral, multi-dimensional, and systems approach is needed to better understand risk interactions, considering present and future risks.

- **Recovering** countries and communities will need to consider how they can build back better, greener, more resilient and equitable.

- **A long-term vision** for recovery should align with sustainable development, climate change, and risk reduction agendas. Recovery strategies should prioritize programmes that can meet both immediate recovery needs and long-term resilience objectives.

- **Social protections** need to be expanded, strengthened, and sustained to mitigate the longer-term impacts of the crisis, and build resilience against future shocks.

- **Partnership** is key to undertaking an integrated and transdisciplinary approach to maximize co-benefits to society.

- **Needs assessments** underpin timely, appropriately targeted recovery programmes. Multiple rounds of assessment will be needed to understand long-term impacts and evolving needs. Data and information systems need to be strengthened to enable evidence informed decision-making.

- **Local actions** have provided innovative and effective solutions and will be key to building resilient and sustainable cities.

6.2.2. Bosai Kokutai 2020

On 3 October 2020, IRP participated in the 5th National Convention for the Promotion of Disaster Reduction, which was organized by the National Convention for the Promotion of Disaster Reduction 2020 Steering Committee led by the Cabinet Office. This event has been held since FY2016 and is now in its fifth year. The purpose of this event is to raise awareness of disaster prevention among the people and to share knowledge and experiences about disasters in order to enhance disaster preparedness, and to serve as an opportunity to raise awareness of disaster prevention at the individual and community levels. This year, the event was held online in order to prevent the spread of COVID-19 infection.

Figure 6.3. IRP Guidance Notes Online Display

Through the online photo exhibition, IRP introduced its activities to the international community to promote "Build Back Better" by introducing the sectoral recovery guidance notes, leaflets outlining its activities, the IRP Herald and knowledge products related to COVID-19, and side events at the Global Platform for Disaster Risk Reduction and the Asian Ministerial Conference on Disaster Risk Reduction.

6.2.3. Sendai Disaster Reduction and Future Forum 2021

On 7 March 2021, IRP participated in the Sendai Disaster Reduction and Future Forum 2021 held in Sendai City. The forum was held under the theme, "10 years after the Great East Japan Earthquake for a better future" as an event where citizens could learn about disaster prevention and disseminate their daily activities through sessions, booths, and hands-on events in order to connect the experiences and lessons learned from the Great East Japan Earthquake to future disaster prevention.

Figure 6.4. IRP Booth at the Sendai Future Forum 2021

IRP set up its own exhibition booth and distributed leaflets outlining its activities, USB memory sticks containing many of its publications such as guidance notes and recovery status reports, and the IRP Herald.

6.2.4. COVID-19: Opportunities for Resilient Recovery

IRP co-organized with UNDRR Asia-Pacific and ESCAP a webinar titled 'COVID-19: Opportunities for Resilient Recovery' on 7 May 2020. The webinar was aimed at highlighting the challenges, lessons learned from past disaster recovery events, and recommendations on how countries can start preparing for a recovery that is climate-sensitive, inclusive and contributes to global efforts to build more resilient systems that are better placed to prevent such crises in the future.

The COVID-19 crisis is an opportunity to consider global resilience, not just to COVID-19 but also to an uncertain future, where climate change looms large. Every aspect of society needs to transform, and countries must work together and learn from one another to accelerate action. Even while this crisis is far from over, and the full extent of its impacts has yet to be seen, countries and communities must plan for recovery now, so that when ready, they have a roadmap with processes, people, and resources in place to build back better. The webinar came up with key recommendations to inform resilience pathway.

Key Recommendations

1. Adopt a phased approach to recovery appropriate to the context.

2. Invest in governance and institutional coordination.

3. Strengthen and expand disaster-responsive and adaptive social protection.

4. Streamline data and information systeMs

5. Be innovative in financing mechanisms

6. Fuel resilient infrastructure investments.

7. Promote sustainable consumption and nature-based solutions.

8. Ensure mental wellness and psycho-social care.

9. Promote and strengthen regional integration and solidarity.

10. Capitalize on the UN plans for social and economic recovery

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7. Natural Disaster Databook 2020

7. Natural Disaster Databook 2020

Annually, ADRC publishes the *Natural Disaster Data Book* to provide statistical perspectives in figures and tables of natural disaster data. ADRC obtains data from EM-DAT and analyses it to show the occurrence, death tolls, people affected, and economic impact of disasters (See Annex 2: Notes on the Sources of Data). For this year's (FY2020) issue, two sets of data for statistical perspectives are added: data relating to climate-related disasters and data relating to COVID-19 situation. The approach of presenting the data is as follow:

- Natural disaster data of 2020 is compared with the annual average of disaster data of the past three decades (i.e.,1990-2019) at the global level and at the Asian level

- Climate-related disasters of 2020 is compared with the annual average of the past three decades (i.e., 1990-2019) at the global level and at the Asian level

- COVID-19 situation (i.e., using cumulative data of confirmed cases and deaths) is presented at global level as well as in the ADRC member countries

While many observations could be made after looking at the infographics, the following could be highlighted. Firstly, flood and storm have been the most frequent causes of disasters in 2020 as well as during the last 30 years. These two disaster types also account for the highest number of people affected and the highest economic losses in 2020 and in the last 30 years. This observation indicates that disaster risk reduction and management actions for flood and storm need further improvements. Secondly, flood and storm (unlike earthquake) are climate-related disaster types that show the tendency of frequently occurring, as observed in 2020 and during the last 30 years. This observation is notable not only globally, but also, in Asia. Thirdly, the number of confirmed cases and deaths from COVID-19 has peaked in several occasions since the World Health Organization (WHO) declared the pandemic on 11 March 2020. The highest peak so far was on 26 April 2021, recording a total of 5,695,585 COVID-19 confirmed cases globally on that day. Although some western countries started to roll out vaccines that time, there emerged some COVID-19 variants (e.g., delta variant) that might have contributed to the increasing number of confirmed cases. In ADRC member countries, cumulative data shows that COVID-19 situation is so varied, reflecting the differences in policies as well as socioeconomic conditions of Asian countries.

7.1. Global Disaster Data

This section presents the global disaster data pertaining to the occurrence, death tolls, people affected, and economic losses in 2020 as compared to the last 30 years (1990-2019). The source of all data, as used in this section, is from *EM-DAT/CRED, UC Louvain, Brussels, Belgium, www.emdat.be (D. Guha-Sapir), 26 May 2021.*

7.1.1. Occurrence

The total number of disaster occurrence in 2020 is 398. This number is higher compared to the annual average of 374 disaster occurrence in the past three decades (1990-2019). Flood and storm show the highest number of occurrences in 2020 as well as during the last 30 years (Figure 7.1).
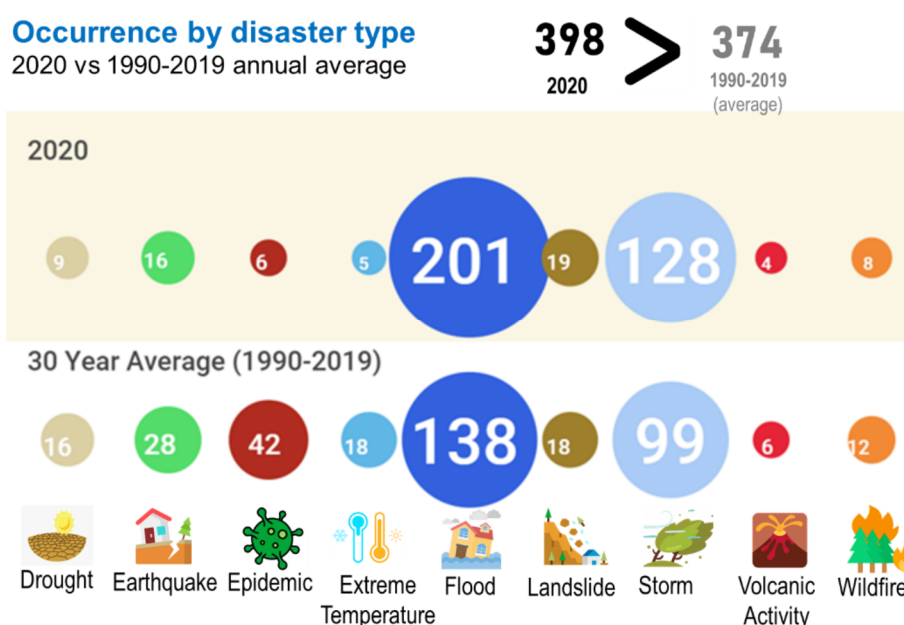
Figure 7.1 Occurrence of Disaster 2020 vs 1990-2019
(EM-DAT/CRED, 2021)

Of the total recorded disasters in 2020, forty one percent (163) occurred in Asia, indicating that Asian region remains the most disaster-prone region in the world (Figure 7.2).
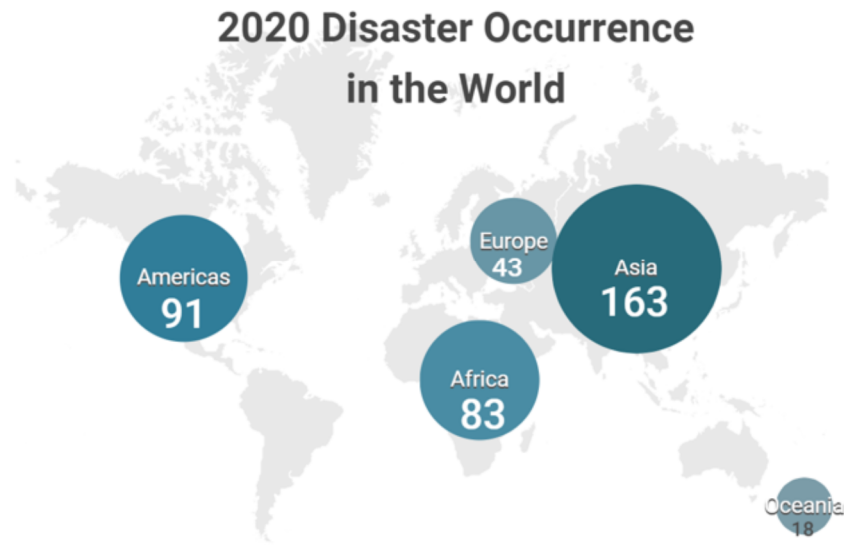
Figure 7.2 Disaster Occurrence by Region
(EM-DAT/CRED, 2021)

7.1.2. Deaths

In 2020, the total number of deaths from disasters (excluding deaths from COVID-19) is 15,286. This number is lesser compared to the annual average of 62,361 deaths from disasters in the last three decades (Figure 7.3).
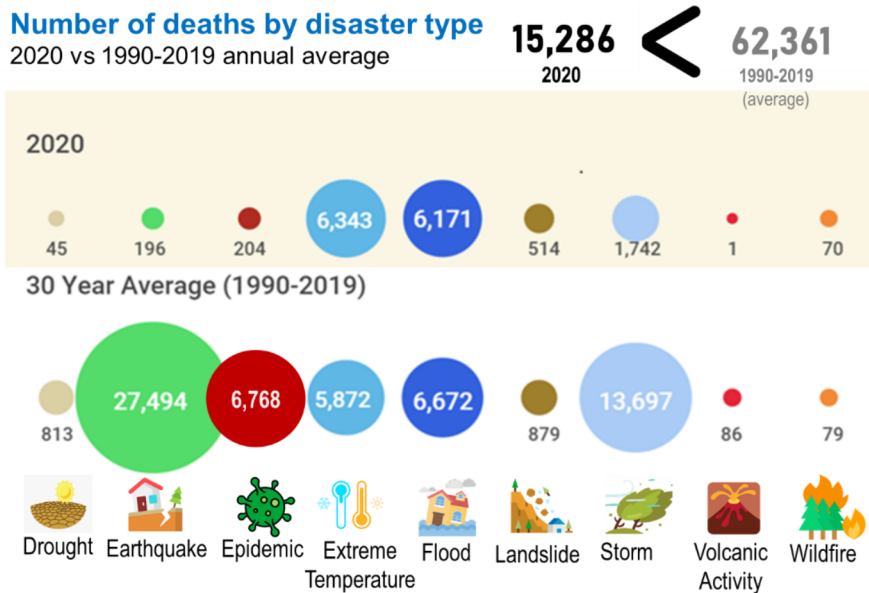

Figure 7.3 Deaths by Disaster Type 2020 vs 1990-2019
(EM-DAT/CRED, 2021)

The occurrence of high mass casualty events, such as the 2004 Indian Ocean Tsunami, the 2010 Haiti Earthquake, and the 2011 Great East Japan Earthquake, explains why the

annual average number of deaths during the last 30 years is much higher compared with the deaths from disaster in 2020.

7.1.3. People Affected

People affected by disaster in 2020 is about 99.1 million. This number is lesser compared to the annual average of 202.1 million people affected by disasters in the past three decades (Figure 7.4).
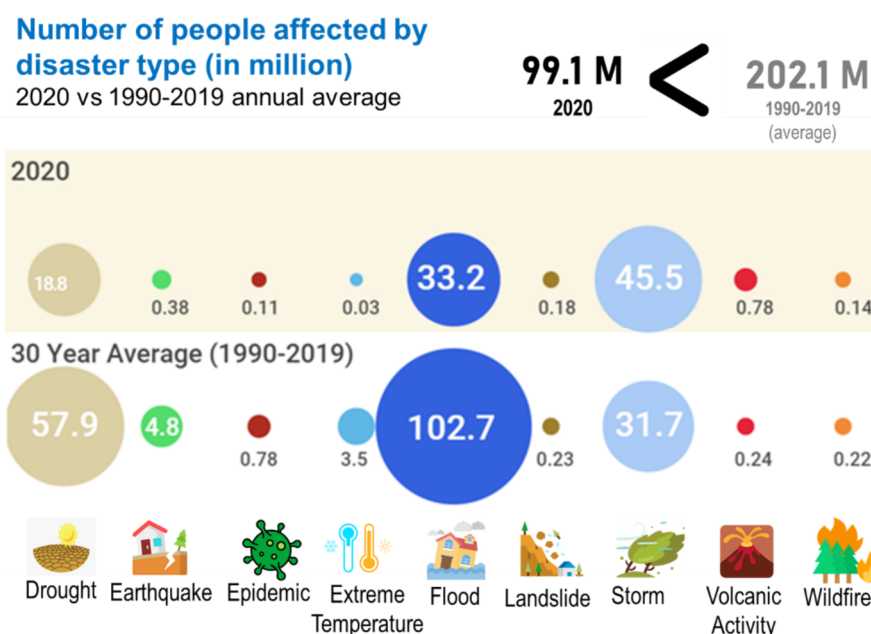

Figure 7.4 People Affected by Disaster 2020 vs 1990-2019
(EM-DAT/CRED, 2021)

Compared to the last 30 years, there were less occurrences of high-impact events (e.g., the 2015/2016 drought in India) in 2020. This could be one of the reasons why the number of affected people in 2020 is lesser compared to the annual average of the last three decades.

7.1.4. Economic Losses

Economic losses due to disasters in 2020 is recorded at US$ 173.1 billion. This figure is higher compared to the annual average of US$ 108.5 billion disaster economic losses in the past three decades. Notably, much of the economic losses were caused by storms and floods (Figure 7.5).
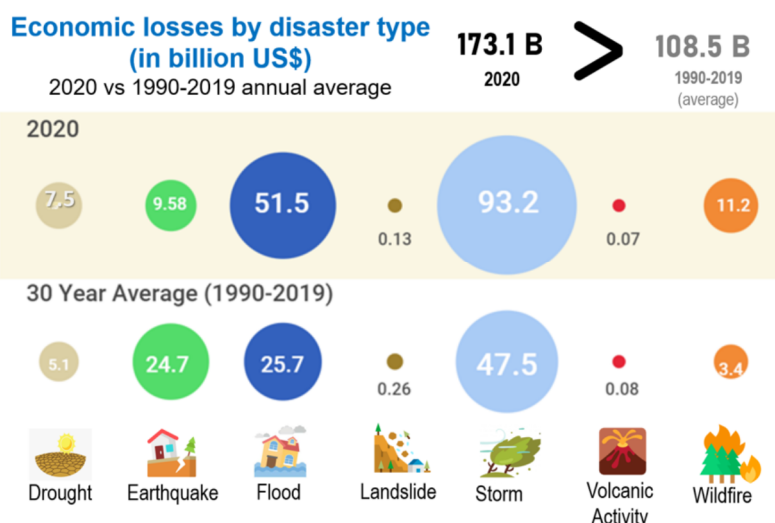
Figure 7.5 Economic Losses 2020 vs 1990-2019
(EM-DAT/CRED, 2021)

7.2. Asian Disaster Data

This section presents the Asian disaster data pertaining to the occurrence, death tolls, people affected, and economic losses in 2020 as compared to the last 30 years (1990-2019). The source of all data, as used in this section, is from *EM-DAT/CRED, UC Louvain, Brussels, Belgium, www.emdat.be (D. Guha-Sapir), 26 May 2021.*

7.2.1. Occurrence

Asian region recorded a total number of 163 disaster occurrence in 2020. This number is higher compared to the annual average of 146 disaster occurrence in the past three decades (1990-2019) as shown in Figure 7.6.
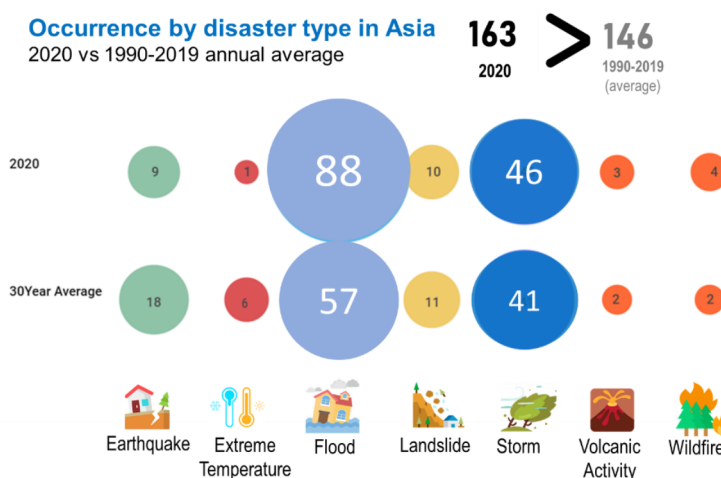

Figure 7.6 Occurrence Disasters in Asia 2020 vs 1990-2019
(EM-DAT/CRED, 2021)

Similar to the global trend, flood and storm show the highest number of occurrences in 2020 as well as during the last 30 years in Asia. These disasters mostly occurred in Indonesia, China, Vietnam, India, Turkey, Philippines, Iran, Afghanistan, and Pakistan (Figure 7.7).
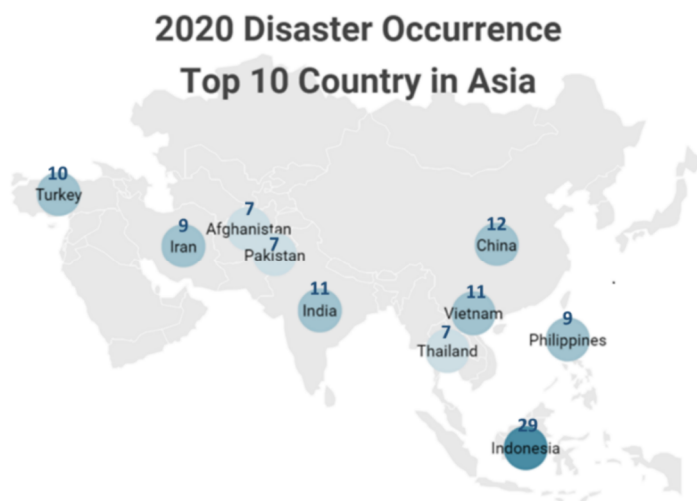

Figure 7.7 Top 10 Countries of Disaster Occurrence 2020
(EM-DAT/CRED, 2021)

7.2.2. Deaths

In Asia, the total number of deaths from disasters (excluding deaths from COVID-19) in 2020 is 6,042. This number is lesser compared to the annual average of 38,398 deaths from disasters in the last three decades (Figure 7.8).
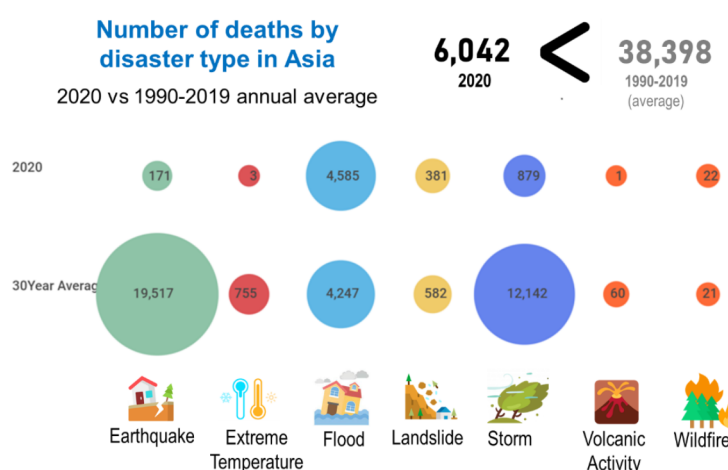

Figure 7.8 Number of Deaths in Asia 2020 vs 1990-2019
(EM-DAT/CRED, 2021)

7.2.3. People Affected

People affected by disaster in Asia in 2020 is about 62.4 million. This number is lesser compared to the annual average of 175.5 million people affected by disasters in the past three decades in the region (Figure 7.9).
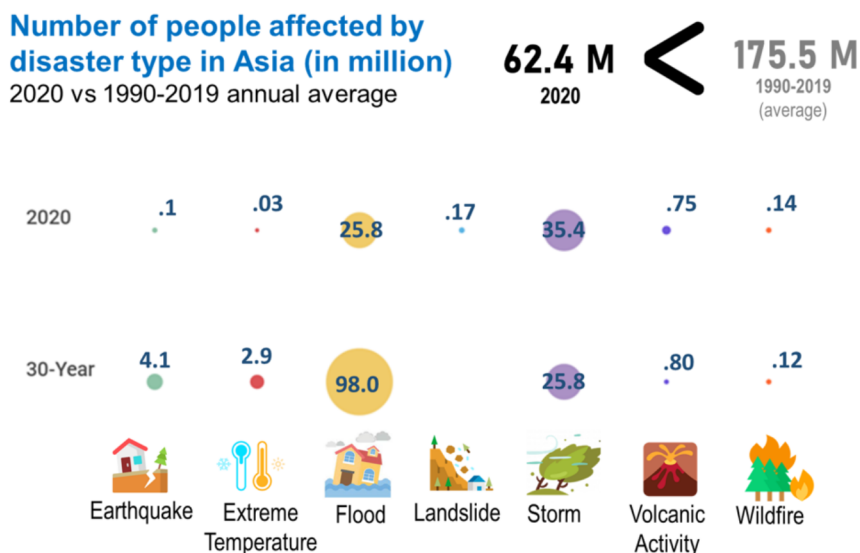

Figure 7.9 People Affected in Asia 2020 vs 1990-2019
(EM-DAT/CRED, 2021)

7.2.4. Economic Losses

While the number of deaths and people affected by disaster is lesser compared to annual average of the past 30 years, the economic losses are higher. Economic losses in 2020 is US$ 67.4 billion, which is higher than the annual average of US$ 49.2 billion during the past three decades (Figure 7.10).
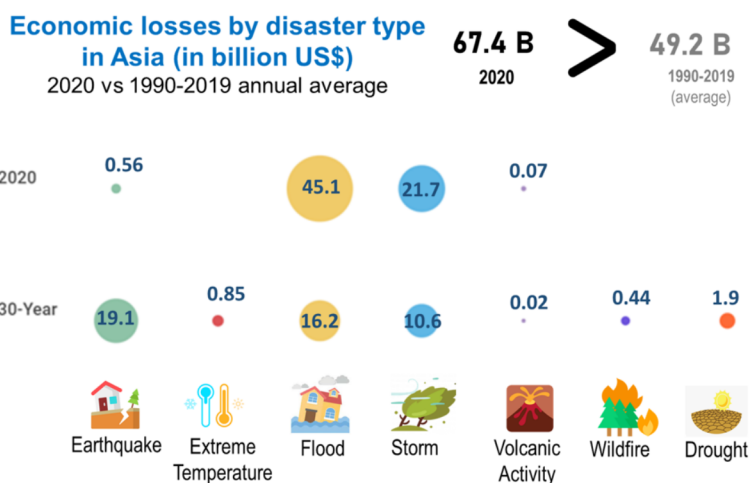

Figure 7.10 Economic Losses in Asia 2020 vs 1990-2019
(EM-DAT/CRED, 2021)

7.3. Climate-Related Disasters

This section looks into the occurrences of climate-related disasters, especially flood and storm during the past 30 years (1990-2019) as compared to its occurrences in 2020. The source of all data, as used in this section, is from *EM-DAT/CRED, UC Louvain, Brussels, Belgium, www.emdat.be (D. Guha-Sapir), 26 May 2021.*

In the past 30 years, the tendency of occurrences of flood and storm as compared to earthquake have been consistently high. Of the 10,686 global total disaster occurrences during the period 1990-2019, flood accounts for 4,366 (41%) occurrences while storm accounts 3,214 (30%) of occurrences. In other the combined occurrences of flood and storm account for 71% of total disaster events. A similar trend is shown in Asia (Figure 7.11).
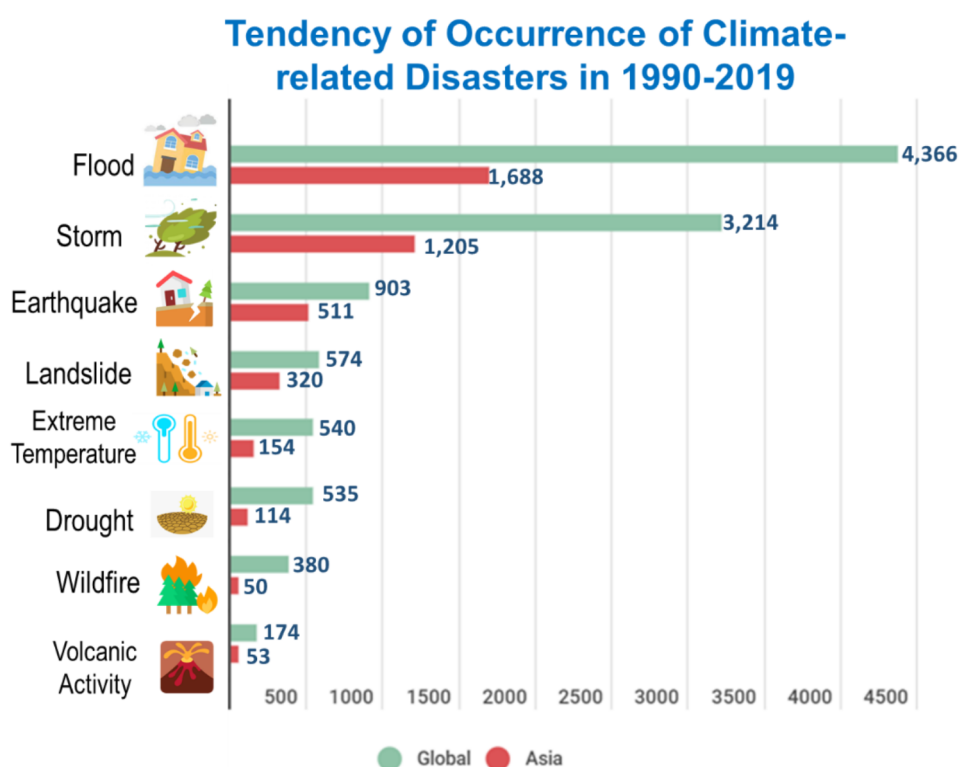

Figure 7.11 Tendency of Occurrence of Flood and Storm 1990-2019
(EM-DAT/CRED, 2021)

7.3.1. Global Trend in Climate-Related Disasters

In 2020, flood and storm (which are climate-related disasters) account for the highest number of disaster occurrences globally. This number shows a similar trend during the past 30 years (1990-2019) as shown in Figure 7.12.

Tendency of Occurrence of Climate-related Disasters in the World 2020

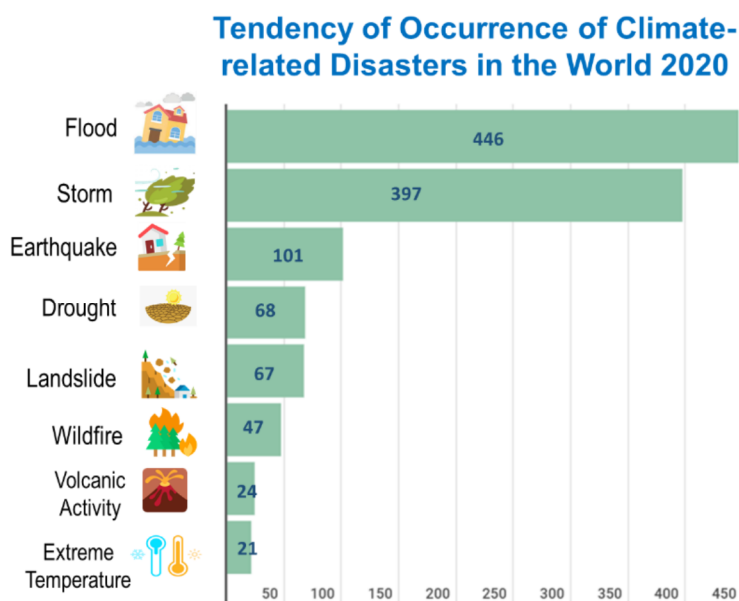|	
Flood	446
Storm	397
Earthquake	101
Drought	68
Landslide	67
Wildfire	47
Volcanic Activity	24
Extreme Temperature	21

Figure 7.12 Tendency of Occurrence of Flood and Storm 2020
(EM-DAT/CRED, 2021)

As noted earlier, flood and storm are not only the most frequent causes of disasters in 2020 and during the last 30 years, but these also account for the highest number of people affected as well as economic losses.

7.3.2. Asian Trend in Climate-Related Disasters

Similar to the global data, flood and storm account for the highest number of disaster occurrence in Asia in 2020 (Figure 7.13).

Tendency of Occurrence of Climate-related Disasters in Asia 2020

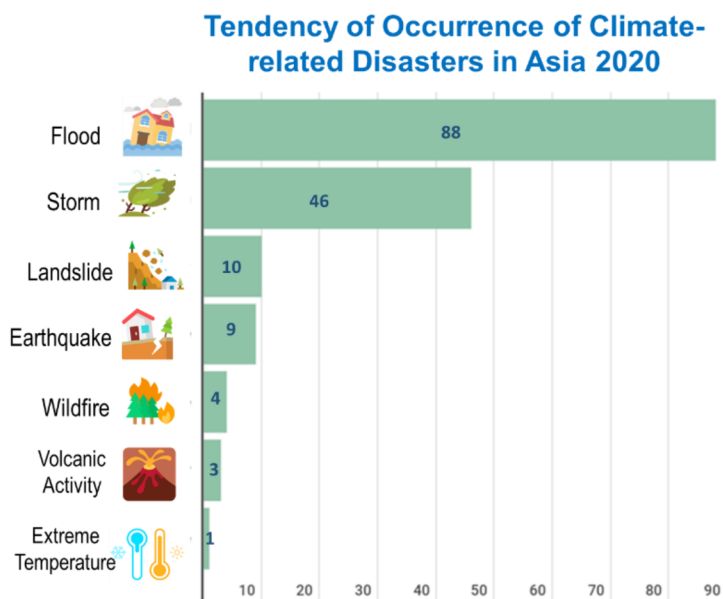|	
Flood	88
Storm	46
Landslide	10
Earthquake	9
Wildfire	4
Volcanic Activity	3
Extreme Temperature	1

Figure 7.13 Tendency of Occurrence of Flood and Storm in Asia 2020
(EM-DAT/CRED, 2021)

7.4. COVID-19 Data

This section looks into the cumulative data of COVID-19 confirmed cases and deaths since 11 March 2020 when the World Health Organization (WHO) declared it as a pandemic. Infographics in this section show the global COVID-19 situation as well as the situation in ADRC member countries. The source of all data, as used in this section, is from the *World Health Organization Coronavirus (COVID-19) Dashboard, https://covid19.who.int/, 21September 2021*.

7.4.1. Global Situation

Since 11 March 2020, the number of confirmed cases has been peaking for several occasions (Figure 7.14). The highest peak was on 26 April 2021, recording a global total of 5,695,585 confirmed cases on that day.
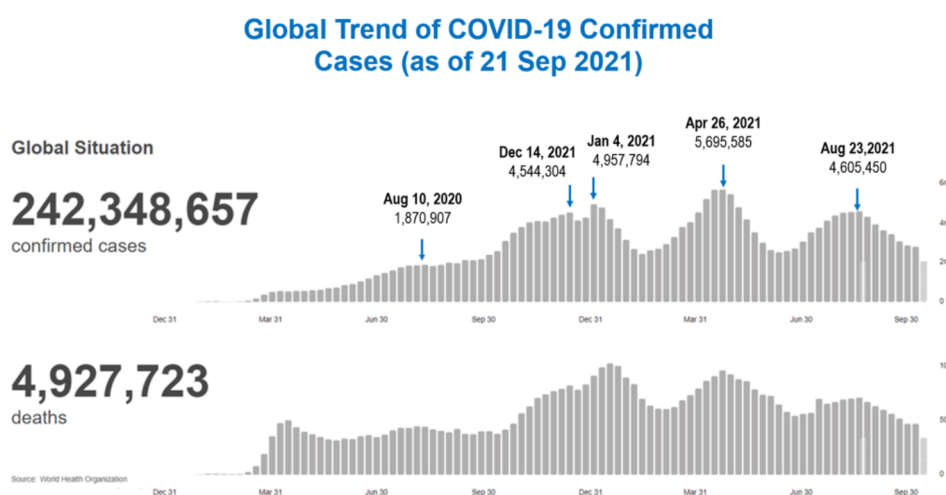

Figure 7.14 Global Situation of COVID-19
(WHO, 2021)

In January 2021, western countries started rolling out COVID-19 vaccines which maybe contributing to the declining number of confirmed cases of infection during the months of February and March. However, during those times, there were also new variants of COVID-19 (e.g., delta variant) that were more transmittable. It is likely that the variants contributed to the increasing number of confirmed cases, reaching the highest record in 26 April 2021.

7.4.2. Situation in ADRC Member Countries

At the outset, it should be noted ADRC has a total of 31 member-countries. However, due to lack of data reported to the WHO, only the COVID-19 situation of 20 member-countries are presented (Figure 7.15).
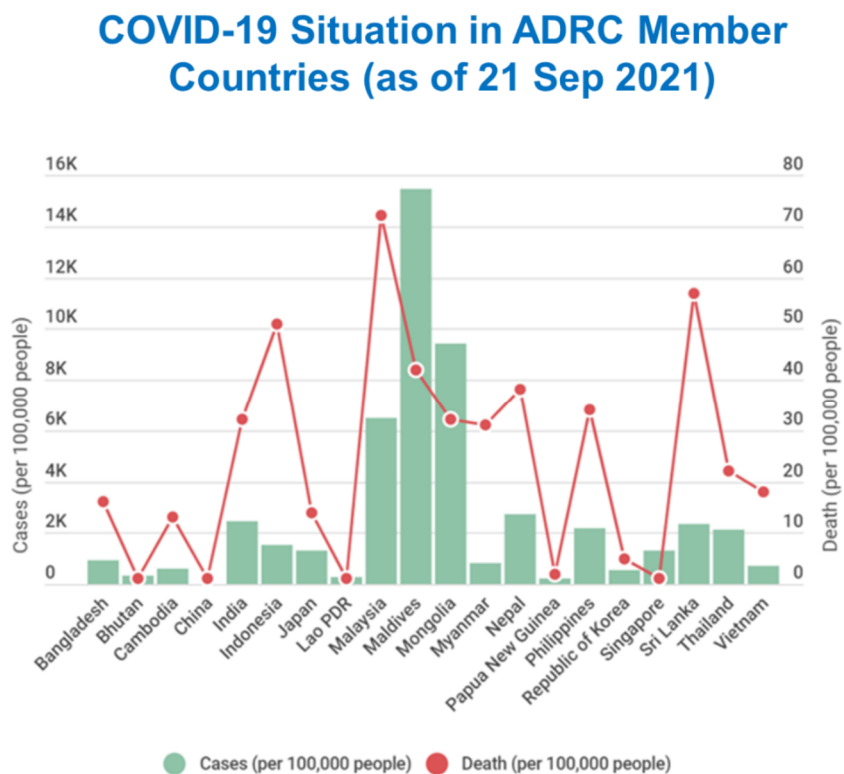

Figure 7.15 COVID-19 Situation in ADRC Member Countries
(WHO, 2021)

The data indicates that countries in Asian region are so diverse in terms of policies and programs in controlling the spread of COVID-19 infection (as partly explained in Section 2.2). Why is it that countries like Bhutan, China, Lao PDR, Papua New Guinea and Singapore could minimize the number of deaths from COVID-19 while India, Malaysia, and Sri Lanka could not? One likely explanation is that ADRC member countries vary in the degree of implementing the common countermeasures for COVID-19 (e.g., face covering, social distancing, and hand sanitation) due to differences of local situations, including economic conditions and socio-political contexts. For instance, Japan and the Republic of Korea did not implement nationwide lockdowns nor strict travel restrictions while countries like India and the Philippines imposed lockdowns, and even commanding the military to enforce those restrictions.

Annexes

History of Establishment of ADRC

1990s: International Decade for Natural Disaster Reduction (IDNDR)

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

1994: 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. Since then, disaster reduction activities have been promoted throughout the world based on this strategy.

1995: 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.

1996: Asian Natural Disaster Reduction Experts Meeting

The Government of Japan and the IDNDR Secretariat jointly organized an expert meeting in October 1996 to thresh 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

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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.

1997: Asian Disaster Reduction Cooperation Promotion Meeting

Again, 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. Likewise, the key personnel from the disaster reduction bureaus of 23 countries attended the meeting with an overall goal of promoting 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.

1998: Establishment of ADRC

Gaining momentum from these 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.

Annexes

Notes on Sources of Data

Natural Disaster Data

All disaster data are based on EM-DAT: The Emergency Events Database - Université catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium. Data set was obtained on 26 May 2021, unless otherwise stated.

EM-DAT Criteria:

For a disaster to be entered into the database, at least one of the following criteria must be fulfilled:

- Ten (10) or more people reported killed
- Hundred (100) or more people reported affected
- Declaration of a state of emergency
- Call for international assistance

Data Book 2020 follows the EM-DAT definitions of "people killed" as persons confirmed as dead and persons missing and presumed dead; "people affected" as the sum of injured, homeless, and affected requiring immediate assistance during the period of emergency and requiring basic survival needs such as food, water, shelter, sanitation and immediate medical assistance.

Disaster Terms:

Drought includes an extended period of unusually low precipitation that produces a shortage of water for people, animals and plants.

Earthquake includes ground shaking and tsunami.

Epidemic includes bacterial and viral infectious diseases.

Extreme Temperature includes heat wave, cold wave, and extreme winter conditions.

Flood includes general flood, and flash flood.

Insect Infection is pervasive influx and development of insects or parasites affecting humans, animals, crops and materials.

Landslide includes avalanche, debris, and rockfall.

Storm includes local storm, tropical cyclone, and winter storm.

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Volcanic activity means volcanic eruption.

Wildfire includes bush/brush fire, forest fire, and scrub/grassland fire.

Classification of EM-DAT:

EM-DAT distinguishes between two generic categories for disasters: **natural** and **technological**. The natural disaster category is divided into 5 sub-groups, which in turn cover 15 disaster types and more than 30 sub-types. The technological disaster category is divided into 3 sub-groups which in turn cover 15 disaster types, https://www.emdat.be/classification

COVID-19 Data

All COVID-19 data used in the Data Book 2020 is based from the World Health Organization Coronavirus (COVID-19) Dashboard, https://covid19.who.int/ accessed on 21September 2021.

Data from the WHO COVID-19 Dashboard are from the official reporting to WHO through regional offices and also from public websites, not official reported to WHO. Member States select the reporting system they prefer to use and data from different reporting systeMs Individual countries, area and territories may decline to allow country-level disaggregation.

Some ADRC member-countries have no record of COVID-19 data in the WHO COVID-19 Dashboard.