2. Highlights of 2016/2017

2-1. ADRC study visit to the affected areas by Kumamoto Earthquakes

2-1-1. Overview

On 14 and 16 April 2016, earthquakes occurred in the middle of Kyushu Island, in southwestern Japan, measuring a magnitude 7 (the highest level) on the seismic intensity scale of the Japan Meteorological Agency (JMA). The quakes caused 161 deaths in Kumamoto prefecture and 8,369 houses were totally destroyed in Kumamoto and Oita Prefectures (as of 14 December 2016, Emergency Disaster Response Headquarters). The direct economic losses are estimated at ¥2.4–4.6 trillion (Kumamoto Prefecture estimated \3.8 trillion).

ADRC has made maximum efforts to visit the affected areas in member countries by natural disasters. So far, study visits together with ADRC member countries include the case after the Gujarati earthquake in India in January 2001, and the case for the Indian Ocean Tsunami in 2004.

At the time of the Kumamoto Earthquakes, an ADRC survey team visited the affected site from 18-21 May 2016, two month after the occurrence of the events, in cooperation with relevant organizations. ADRC compiled the overview of the earthquakes and damage based on the basic information provided by relevant authorities and also shared the report among member countries.

Furthermore, Cabinet office, together with ADRC organized a study visit targeting for DRR officials from ADRC member countries in December 2016 based on the previous surveys.

2-1-2. ADRC Steering Committee meeting in Kumamoto

Prior to the ADRC study visit to the affected areas by the Kumamoto earthquakes, on December 19th in Kumamoto City, an ADRC Steering Committee meeting took place. The SC meeting, attended by 23 ADRC member countries focused on future of ADRC and DRR priorities for its member countries and actively exchanged views towards its 20th anniversary in 2018.

Fig. 2-1-1 ADRC steering committee meeting in Kumamoto

2-1-3. Study visit to the affected areas by the Kumamoto

ADRC study visit to the affected areas of the Kumamoto Earthquakes was organized on 19 to 20 December, 2016 and attended by 29 participants from 23 countries, and many academics and participants from the private sector in Japan.

During the two days' study visit, a briefing session was organized in the morning, followed by the

relevant visits in the afternoon on both 1st and 2nd day. Day1 started with a key note lecture by Professor Makoto Iokibe, chairman of the Advisory Committee for Recovery and Reconstruction of Kumamoto, followed by a briefing by Kumamoto prefecture and that by Kyushu Regional Development Bureau, Ministry of Land, Infrastructure, Transport and Tourism, MLIT. In the afternoon, participants visited Mashiki Town that was one of those damaged most severely, and the collapsed Aso bridge area under unmanned operation there.

Fig. 2-1-2 Group photo the participants of the study visit

Day 2 focused on Kumamoto castle, on which Kumamoto city first provided a introductory briefing on the damages on the cultural heritages, and three sub session took place on emergency relief, evacuation and challenges facing evacuees, and on recovery, reconstruction and BBB. Member countries reported about their experiences and discussed actively the four themes.

Day 1 morning : Status of the affected areas and DRR effort

Day one, 19th, December started with an opening remark by Professor Masanori Hamada, by representing ADRC. Chairman of ADRC highlighted three key aspects of the Kumamoto earthquakes. First, the previous strong quake followed by the main shock, secondly rescue and recovery activities facing continuous aftershocks, and damages on cultural heritages. Ms.Setsuko Saya, Director of Cabinet Office, Japan, then gave another opening speech and a presentation on the government efforts facing the Kumamoto earthquakes by summarizing the report by Cabinet office titled “Emergency relief and assistance for the life of the affected by learning from the Kumamoto Earthquakes (December 20th 2016,).

1 Keynote speech : Professor Makoto Iokibe, “Japan facing mega disasters: Steps towards overcoming the challenges”.

Professor Makoto Iokibe, chair of the Reconstruction Design Council in Response to the Great East Japan Earthquake, Chancellor, Prefectural University of Kumamoto, and President of Hyogo Earthquake Memorial 21st Century Research Institute who made efforts for recovery and reconstruction of Hyogo, made a key note speech titled “Japan facing mega disasters : Steps towards overcoming the challenges”. Professor Iokibe has been working as the chair of the Advisory Committee for Recovery and Reconstruction of Kumamoto, as well.

Professor Iokibe, after talking about the experiences of Great Hanshin Awaji Earthquake and the Great East Japan Earthquake, stressed the importance of learning from the lessons learnt from the disasters in the past. As Japan saw many mega disasters in its history, evidence based studies on disasters in the past will constitute the basis of DRR system, facing recent growing threat of water related disasters. Considering the occurrence of the Great Hansin Awaji earthquake and the

Great East Japan Earthquake in these decades, more intense earthquakes could happen in these 20 to 30 years. Impacts of earthquakes and tsunami in the future could however be reduced by taking well into consideration of the following three points:

1) Getting better prepared against natural disasters by raising awareness and building capacity to overcome natural disasters
2) Building early alert system by using mobile phone and so on
3) Learning from history and experiences in the past including those of "mutual help", "push mode assistance", "creative recovery" or "Build back better".

2 Presentations

1) Kumamoto Prefecture

Kumamoto prefecture then presented the overview of the Earthquakes and measures taken by the prefecture including those for recovery and reconstruction. Mr. Honda, Director General on Crisis management, Office of governor, first reported the nature and characteristics of the Earthquakes compared to those of Great Hanshin Awaji, or the Great East Japan. The case of Kumamoto is characterized by the two quakes of level seven in 28 hours, many aftershocks, large share of the affected population amounting to 83 %, and the maximum share of evacuees amounting to 10.3 % of the total population.

The prefecture gave positive evaluation regarding collaboration with relevant parties and provision of temporary housing units by reflecting the evacuees' opinion, while they find that further efforts will be necessary regarding key DRR facilities including DRR centers, truck roads and lifelines that had been affected. In addition, awareness rising targeting residents should have been more strengthened, lack of which has led to poor preparedness against natural disasters among residents. Finally, Mr. Honda made a presentation on their efforts of recovery and reconstruction including their vision for reconstruction.

2) Kyushu Regional Development Bureau, MLIT "Relief and restoration effort of the Aso Ohashi district landslide"

Kumamoto Earthquake Counter plan Office, Kyushu Regional Development Bureau, MLIT reported about the status of recovery of the slopes significantly collapsed at the Aso Bridge area. On 16th April, due to the main shock, large volume of sand extending 700 m length and 200 m width collapsed, and Aso Bridge together with Japan railway line and National road no.57. Aso Bridge directly supporting people's life, widely used by tourists, should get recovered immediately . In order to avoid secondary disaster; however, unmanned method applied at the occasion of the Mount Unzen volcano eruption is used for removing sands left on the slopes. Participants visited this area in the afternoon of Day1.

3) Extensive support to Kumamoto by Union of Kansai Governments

Mr. Hiroaki Okubo, Superintendent of Emergency Management, Hyogo Prefecture and Director General, Region-wide Disaster Preparedness Office, Union of Kansai briefed about the

support for Kumamoto made by the Union of Kansai. The Union of Kansai dispatched three persons 90 minutes after the first quake already, opened soon after the main shock on-site headquarters in the Kumamoto Prefecture office, and started coordinating with Kyushu region governors association regarding the recipients. By 19th July, they dispatched in total 6,948 officials except policemen, firemen, and medical staff, to the affected areas and provided relief supplies and support staff.

They organized support teams including emergency and rescue team comprised of public school faculty and staff known as "EARTH", assistance for evacuation centres, medical support, and waste treatment and sanitation. In addition, human resources were sent for housing damage assessment, helpdesk services for citizens, and so on. He then raised the necessity of sharing of know-how, standardization of the activities, and collaboration with private sector based on the lessons throughout the assistance for Kumamoto.

Day 1 afternoon : Study visits

1. Mashiki Town

Mashiki town, developed as a residential area of the city of Kumamoto and home to 34,600 population as of February,2017, was affected by the two quakes of level 7. Death toll including those relevant amounted to 27 and 2,768 houses were totally destroyed, 3,033 partially destroyed.

Evacuees increased to reach 16,050 accommodated into 10 evacuation centers. From June 14th they started to move to temporary housing amounting to 1,562 in 18 areas. There located also community centers so as to avoid isolation of the residents.

From July 7th, the town started dismantling and removing the houses assessed as half-damaged or more severely damaged by the disaster certificate, and adopted a "Basic principles of Mashiki town recovery" on the 6th July to present basic idea. During the visit, participants visited the affected town hall, had a brief walk in the most severely affected areas, and visited the largest temporary housing area "Techono area" and a community center, where they had a briefing and discussion.

Fig. 2-1-3 Emergency Temporary House (Techno Area Temporary multi-unit apartments "Minna no Ie")

2. Collapsed Aso bridge area

Participants visited the collapsed Aso Bridge area. They had an on-site briefing on the operation to remove unstable sand by using unmanned machine, and visited also a small temporary office where they were remotely operating the unmanned machines. Kumamoto branch office also presented the plan for recovery including

Fig. 2-1-4 Landslides in Aso Bridge

building of a new bridge.

Day 2 morning : Lessons learnt from member countries to support Kumamoto

1. Subsession 1 : Damage to cultural heritages and participatory process for recovery through encouraging tourism

After a brief introduction by the delegate from Ministry of Home Affairs, Nepal, Mr. K. Mishima, General Manager of Tourism and Exchange Department, City of Kumamoto reported about the damage to Kumamoto castle and challenges for its recovery.

The castle, visited annually by 1.7million visitors is one of the most important tourist destinations in Kumamoto, composed of various important cultural heritages. He summarized by using photos the damages by the Earthquakes and challenges towards recovery. The Earthquakes affected the stone walls, turrets , gates and tiles including those designated as the important cultural heritages. The keys for recovery of the castle include: 1) Promoting recovery works by focusing on safety as well as protection of cultural heritage and tourism, 2) Reinforcing the stone walls and other walls by using both traditional methods and cutting edge technologies, and 3) Developing routing well considering safety of tourists, designating evacuation passages and installing facilities for DRR. He says “It may take more than 20 years for perfect recovery, we will thus accelerate delivery of measures so as to use the Castle as a resource for tourism.

Mr. Yang Dorji,Chief Programme Officer, Ministry of Home & Cultural Affairs, Bhutan, then made a presentation on the damages on cultural heritage by natural disasters in Bhutan, followed by Ms. Sang Khov, Deputy Secretary General, National Committee for Disaster Management Council Minister, who talked about protection of cultural heritage, in particular, Angkor Wat, from natural disasters by controlling the number of tourists, training security guards, and awareness raising targeting tourists, in order to limit the damages caused by natural disasters.

2. Subsession 2 : Effective emergency response

Commissioner Mr. Wee Teck Eric Yap, Singapore Civil Defense Force moderated the subsession and Philippines, Myanmar and Indonesia contributed to the session by provided recent cases of disasters. First, assistant Secretary Rodolfo Demosthenes Centeno Santillan, Office of Civil Defense, Philippines, presented the emergency relief measures against Typhoon Haiyan in which existing plan or preparedness measures did not work due to the scale of the disaster. Ms. Nilar Htun, Ministry of Social Welfare, Relief and Resettlement, Myanmar briefed about the DRR system in the country, followed by a report by Dr. Raditya Jati, BNPB, Indonesia on the earthquake in Aceh on 17th December, 2016. He stressed that the availability of risk map contributed to immediate response when the earthquake happened and that assistance by AHA centre was available for coordination. At the end of this subsession, Ms. Setsuko Saya, Cabinet Office asked the Philippines the organisations issuing evacuation order and the Philippines replied that it would be governors. Vietnam asked whether emergency plans are prepared against

all the scales of typhoon. Philippines answered that plan is made for all types of typhoon regardless of the scale.

3. Subsession 3 : Evacuation and rehabilitation : Facing societal changes and increasing diversity

This session moderated by Mr. Badral Tuvshin, Chief, National Emergency Management Agency of Mongolia, started with a presentation by Ms. Tomomi Katsuya, Deputy Secretary-General, Kumamoto International Foundation on "Support for non-Japanese residents and tourists throughout evacuation and recovery phases". After the earthquakes, 200 non-Japanese people came to the international centre in Kumamoto City seeking for information on transport measures to leave Kumamoto. Information disseminated after the disaster was largely in Japanese, Centre thus replied in many other languages and collected and provided information to non-Japanese people in need of information. Throughout the study undertaken after the Earthquakes, they have learned that daily contacts with non Japanese people is a key for effective emergency operation.

Mr. Md. Zakir Hossain Akanda, Ministry of Disaster Management and Relief, Bangladesh compared his impression in Mashiki town and the experiences in his country. Dr. Yujiro Ogawa, Representative of Bosai International and former ED of ADRC followed up the study visit of Day 1 to Mashiki town. He drew attention to emergency housing damage assessments for all the houses after a disaster, which has three grades of dangerous, caution and checked. He pointed out several problems for smooth issuance of disaster certificate, requesting payment of earthquake insurance, and so on.

Finally, Associate Professor Akira Takagi, University of Kumamoto, who had opened together with his students a volunteer based Café "Ohisama" in the Techno temporary housing area, in Mashiki Town, briefed about his activities . The café was opened for the purpose of encouraging activities by themselves, and supporting evacuating children by providing the space for children. The activities have been supported by students' voluntary activities and based on donation and subvention. They changed however their policy and start charging the fee from the users of the café in order to continue the activities that require funding.

4. Theme 4 : Recovery, reconstruction and Build Back Better

Mr. Sena Srinath Miyanawala, Permanent Secretary to the Ministry, Sri Lanka, opened the subsession as moderator, and Mr. Suporn Ratananakin, Disaster Management Specialist of Department of Disaster Prevention and Mitigation, Ministry of Interior, Thailand reported about the flood in 2011 damaged also the worked heritage of Ayutthaya. Ayutthaya, surrounded by the three rivers, left flooded for three months, was damaged by erosion and salt damage. More than 100 historical monuments were affected, which raised significant concerns among the experts.

The second speaker, Mr. Vigen Harutyunyan, Head of Department, Data Acquisition Processing and Analysis, Center of Seismic Hazard Assessment, Western Survey for Seismic Protection, Ministry of Emergency Situation briefly explained about the damages caused by the

Spitak earthquake in 1988 including the major factor bringing about the damages, which includes absence of construction standard, leading to poor architectural method.

During the discussion, Indonesia asked Thailand about the indirect damages over the communities located in Ayutthaya and build back better. Mr. Ratananakin, Thailand replied that they have a plan to relocate the communities outside Ayutthaya, as well as the importance of awareness raising about the value of Ayutthaya and provision of job opportunities. At the end, participants shared the situation in member countries regarding the gaps between the reality and expectation due to the time necessary for recovery.

Day 2 afternoon : Status of Kumamoto Castle after the Earthquakes

Afternoon of Day 2 was dedicated to the visit of the Kumamoto castle site that was closed after the disaster, thanks particularly to the city of Kumamoto. Regarding Kumamoto Castle, amongst all, wooden turrets of Udo and Higashijuhakken, Fukai gate and so on are designated as "national important cultural properties", and the Kumamoto castle site including ramparts designated as national "Special historic site. The Earthquakes affected 13 "national important cultural "monuments" leading to significant damages including collapse of the building and walls. In order to accelerate recovery works that may last more than 20 years, a long term plan will be adopted in the coming fiscal year. The visit provided precious opportunities for the participants to enter the site of the affected cultural properties, where they saw, for example, the Iidamaru-gokai turret located on a collapsed stone wall, dependant on the only one pillar surviving the Quakes, and sustained by a heavy operational vehicle.

Fig. 2-1-5 Observation on Kumamoto Castle

Towards the future

During the visit, one of the focuses was longer term participative recovery by involving tourists from abroad as well as from Japan, regarding recovery of Kumamoto. Good practices of participative recovery through tourism and wide participation by citizen include, amongst all, the case of DRI after the Hanshin Awaji Earthquake, Sanriku railroad after the Great East Japan Earthquake in Japan, while cases of abroad include New Orleans after *the* Hurricane Katrina, *and th*e case of Mt. Pinatubo. It will be important to explore further various possibilities of participative recovery. Themes that should be studied further, based on the outcome of the study visit include:

- ✓ Sharing disaster experiences and disaster education
- ✓ Evacuation friendly to vulnerable people and challenges
- ✓ Possibility of disaster tourism for the reconstruction of affected areas
- ✓ Impact on the supply chain of Kumamoto, Kyushu, and the Asian region

- ✓ BCP targeting local governments and small and medium-sized enterprises
- ✓ Strengthening of local DRR information infrastructure by using cutting-edge technology such as satellite imagery and ICT equipments.

2-2. Promotion of World tsunami awareness day

2-2-1. Background of ADRC Tsunami DRR workshops

Based on the UN Resolution designating November 5th as the World Tsunami Awareness Day, a new series of awareness raising activities have been initiated by UNISDR, government of Japan, and many other relevant countries and international organizations. ADRC, together with Cabinet Office had long been undertaken Tsunami DRR since the Indian Ocean Tsunami in 2004 by dispatching teams to investigate the damages in collaborating with ADRC counterparts and published awareness raising material of “Inamurano-hi” in more than 10 languages.

In order to further promote tsunami DRR and the World Tsunami Awareness Day, in the fiscal year 2016, two workshops on tsunami DRR were held, one in Lima, Peru and another in Krabi, Thailand for the purpose of sharing lessons learnt from tsunami in the past and discussing future challenges towards effective tsunami disaster risk reduction through multi-sectoral and inter-disciplinary efforts.The former highlighted effects of tsunami on economy and supply chain as well as tsunami DRR policies, while the latter addressed the challenges at local and community level facing tsunami.

2-2-2. Workshop focusing on tsunami DRR policies at national level Tsunami Disaster Risk Reduction in APEC economies

The workshop was organized by ADRC in collaboration with INDECI, Peru and Cabinet Office, Japan, back to back APEC emergency preparedness working grope, EPWG meeting during August 15-16, in Lima.The purpose of the workshop included:

1) Identifying the status of anti-tsunami policies and measures
2) Discussing major challenges
3) Strengthening partnership with private sector in promoting anti-tsunami measures.

It was attended by USA, Vietnam, Chile, Philippines, Chinese Taipei, Thailand as well as Peru and Japan. Participants discussed a wide range of tsunami DRR policies, challenges and trans border effects through supply chain. Private sector in Peru and JICA also provided inputs on their tsunami DRR efforts.

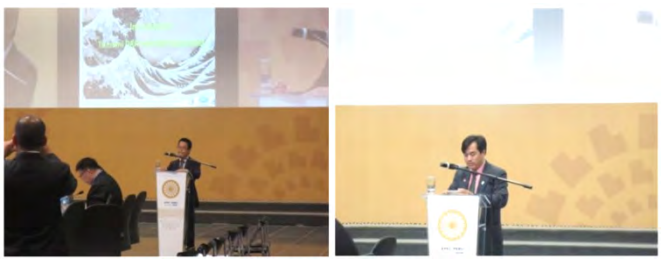

Fig. 2-2-1 Photo on Conference