as of 25 January

Asian Conference on Disaster Reduction 2023

Effective Implementation of DRR Measures
—Enabling Digital Transformation in DRR—

Date: 20 October 2023

Dushanbe, Tajikistan

Summary

ACDR2023 was held at the HYATT REGENCY Dushanbe on 20 October 2023 in Dushanbe, Tajikistan. It adopted the theme, "Effective Implementation of DRR Measures—Enabling Digital Transformation in DRR—". ACDR2023 was co-organized by the Committee on Emergency Situations and Civil Defense under the Government of the Republic of Tajikistan (CoES), Cabinet Office of government of Japan, and the Asian Disaster Reduction Center (ADRC). During the event, participants and experts discussed the effective DRR measures by utilization of Digital Transformation for DRR. ACDR2023 gathered 120 onsite participants comprising representatives from 18 member countries, as well as international and regional organizations, private sector, and academic/research institutes. Additionally, it was attended by a total of 111 online participants including those from 7 member countries.

OPENING SESSION

Ms Sattoriyon Matlubakhon Amonzoda, Deputy Prime Minister of the Republic of Tajikistan, delivered the first opening speech stating that Tajikistan is committed to implementing the Sendai Framework for Disaster Risk Reduction through various initiatives, including investment in resilient infrastructure and the adoption of the National Disaster Risk Mitigation Strategy. She emphasized that the effects of climate change affect all countries, including Tajikistan whose topography is 93% mountainous. In this context, international cooperation and the mobilization of global partners is needed to avert the devastating impact of climate change.

Ms Mami Mizutori, Special Representative of the UN Secretary-General for DRR, stated that by 2030, climate change will result in 30% reduction of crop yields and will cause over 5 million people to be internally displaced in Central Asia. To reduce the impact, Ms Mizutori stressed the need for a paradigm shift from managing disasters to managing risk, or in other words, from prioritizing response to prioritizing prevention. She pointed out that one of the best ways to facilitate this transition is by embracing digital transformation through the application of data analytics and machine learning to support evidence-based and data-driven decisions.

Mr MATSUMURA Yoshifumi, Minister of State for Disaster Management, Government of Japan, said that the devasting disasters of 2023, such as the earthquakes in Türkiye and Syria in February, forest fire in Hawaii in August, and earthquake in Morocco and flood in Libya in September, highlighted the importance of identifying disaster risk information, promoting investments for mitigation, and sharing of experience on 'Build Back Better'. Mr MATSUMURA hoped that the ACDR2023 would be an effective venue for sharing of advanced technologies and expertise that could facilitate innovative measures in DRR.

Dr HAMADA Masanori, Chairman, ADRC and Professor Emeritus, Faculty of Science and Engineering, Waseda University, announced that in July 2023, the Republic of Fiji officially requested to accede to ADRC. He added that the Steering Committee approved its accession at the end of August of the same year, making the Republic of Fiji the 32nd member country of ADRC. Dr Hamada also echoed the increasing threat of climate change-induced disasters, and that it is crucial to enhance disaster resilience of infrastructures and social systems through hardware measures and adaptation.

Mr Rustam Nazarzoda, Chairman of the Committee on Emergency Situations and Civil Defense under the Government of the Republic of Tajikistan, delivered the last opening speech by stressing the importance of ACDR2023, and the significance of the Committee of Emergency Situations and Civil Defense under the Government of the Republic of Tajikistan to be able to host the opportunity in collaboration with the Cabinet Office of Japan and ADRC. He said that ACDR2023 is a platform for policy sharing, knowledge exchange, integration of efforts, and expansion of cooperation in disaster risk reduction. He also mentioned that Tajikistan is one of the UN pilot areas of Early Warning for All initiative, and as a host of ACDR2023, Tajikistan looks forward to greater unity of efforts in the international community.

ROUNDTABLE SESSION

Aimed at providing the ADRC member countries with an opportunity to discuss how to leverage collective action and cooperation in accelerating the implementation of the Sendai Framework towards 2030, this session was co-chaired by Mr Rustam Nazarzoda, Chairman, Committee on Emergency Situations and Civil Defense under the Government of the Republic of Tajikistan, Ms TSUNOZAKI Etsuko, Board Member, SEEDS Asia, and Mr Sebastian Penzini, Acting Head, Regional Office for Europe and Central Asia, UNDRR.

In this session, 16 ADRC member countries (Armenia, Bhutan, Indonesia, Iran, Malaysia, Maldives, Mongolia, Nepal, Pakistan, Papua New Guinea, Philippines, Singapore, Sri Lanka, Tajikistan, Thailand, and Viet Nam) delivered official statements highlighting the progress and challenges in implementing the four priorities of the Sendai Framework: 1) Understanding disaster risk, 2) Strengthening disaster risk governance to manage disaster risk, 3) Investing in disaster risk reduction for resilience, and 4) Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction.

To set the tone for the official statements, Mr Penzini highlighted the gaps identified under each of the four priorities in the Midterm Review of the Sendai Framework in May 2023. In Priority 1, availability of data is reported as a major gap, particularly on disaster losses, multi-hazard risk projections, and climate change scenarios that are useful for strategic planning and investment. In Priority 2, the gaps include the continuing siloed approach of disaster risk governance as well as inadequate efforts for inclusiveness of vulnerable groups and most-at-risk communities. In Priority 3, limited investment in DRR across all levels of the governments is reported as the major gap, including investment for climate action. While gaps are not specifically highlighted in Priority 4, the Midterm Review calls for a strategic approach of going forward covering all other priorities, embracing new technologies, and digital transformation.

To address those gaps, as experienced in ADRC member countries, the official statements offered the following recommendations:

- Scale-up sharing of policies and measures that promote DRR efforts in a coordinated manner, particularly on policies relating to disaster database, early warning, and community-based disaster risk management as well as on measures relating to information management systems, regional knowledge sharing, and disaster response mechanisms.
- Promote sub-regional cooperation in addressing complex and transboundary disaster risks, particularly earthquakes, floods, and typhoons.
- Forge partnerships and joint projects in the areas of hazard and risk identification, mapping, and assessments in a manner that puts greater emphasis in science-based approaches and embrace digital technologies for multi-hazards disaster risk reduction.

SESSION 1: Innovative Solutions for Resilient Societies: DRR Technologies for Earthquakes and Geological Hazards

This session was co-chaired by Mr Pulod Aminzoda, Director of the Institute of Geology, Earthquake Engineering and Seismology of the National Academy of Sciences of Tajikistan, and Dr Sos Margaryan, Director, National Survey for Seismic Protection (NSSP), Armenia. Six session speakers from Tajikistan, Kyrgyz, IRIDeS, UNDRR, CoES, and Türkiye, reported their current efforts and challenges against ground disasters.

In this session, the latest solutions for ground disaster risk reduction through multifaceted approaches were presented, including visualization of disaster risk using DX, measures for earthquake resistance and slope stabilization in cities, and development of design technologies and new materials for disaster-resistant buildings and structures.

It was confirmed that a multifaceted approach is necessary to cope with earthquake and landslide disasters, including citywide seismic intensity estimation and DRR measures using sensors and AI technology, development of new building technologies and materials, and urban planning that incorporates a DRR perspective. It was also confirmed that it is essential for local residents, relevant organizations, and businesses to work together on DRR measures, and that a quick and efficient response by the entire community is necessary to minimize the damage caused by earthquakes.

The latest technologies and practices aimed at resolving these issues were shared, and proposals were made to realize an earthquake-resilient society. Information on advanced technologies and initiatives to mitigate damage from earthquakes and landslides, as well as practical DRR measures, were also shared.

Mr Aminzoda moderated the session and opened the session by stressing the importance of full-fledged integrated scientific and technical support to design and construction in preparedness for earthquakes and seismic risk reduction. As the 2023 Türkiye earthquake indicates, the damages of buildings are caused by construction in the fault zone, shortcomings in the use of seismic hazard assessments, lack of proper control over the quality of construction and the construction materials.

Mr Ulan Abdybachaev, Lead Researcher/ Deputy Head of Department “Geodynamics and Georisks”, Central -Asian Institute for Applied Geosciences (CAIAG), Kyrgyz Republic presented the Eight-Step approach as a way of Earthquakes DRR using the example in Kyrgyz Republic. Estimating an earthquake of M7.5 or over in Bishkek with a return period of 500 years, he introduced a practice of developing a local disaster risk reduction plan through

the analyses of damage assessment, structural and non-structural measures and residual risks.

Prof. David N. Nguyen, Concurrent Associate Professor, International Research Institute for Disaster Resilience (IRIDeS), Tohoku University as well as a researcher at the National Research Institute for Earth Science and Disaster Resilience (NIED), made a presentation on the progress of Japanese Smart community infrastructure data sharing systems development under DRR international standards. Under the International Organization for Standardization (ISO) Technical Committee (TC) 268 in the field of Sustainable Cities and Communities, Working Group 6 is tackling with Smart community infrastructures -for disaster risk reduction including developing guidelines for implementing seismometer systems and basic framework for the implementation of disaster risk reduction measures.

Mr Dilshod Kodirov, National Coordinator, UN Office for DRR, Tajikistan, reported the results and actions of a global initiative, Early Warning for All (EW4All) in Tajikistan. With the partnership of international and national stakeholders, the country has conducted workshops for the analyses of the status of national EWS and identification of gaps to draft the Roadmap.

Mr Azizjon Azizmurodzoda, Researcher, CoES, made a report on preparing the population for earthquakes in Tajikistan. Faced with the earthquake risk, CoES conducts disaster education programs at schools, kindergarten and other education facilities as well as building inspection against earthquake and international search and rescue operations.

Prof. Dr Orhan Tatar, General Director for Earthquake and Risk Reduction, Disaster and Emergency management Authority (AFAD), Ministry of Interior, Türkiye overviewed the 2023 earthquake and reported AFAD's risk reduction, response and recovery efforts. Immediately after the earthquake, AFAD has established an Earthquake Clearinghouse and Earthquake Information System, where all teams working in the field used the application.

SESSION 2: Adaptation to the Climate Crisis: Innovative Approaches to Monitoring and Responding to Glacial Lake Outburst Floods (GLOFs) and Intensifying Floods

This session was co-chaired by Prof. Abdulhamid Kayumov, Director of the Center for Glacier Studies of the National Academy of Sciences of Tajikistan, and Dr Changje Kwak, Research Scientist, National Disaster Management Research Institute (NDMI), Republic of Korea. Six session speakers from Tajikistan, CESDRR, ICIMOD, Korea, CoES and Agha Khan reported the current efforts and challenges against climate crisis related disasters.

The climate crisis has resulted in reports of extreme weather events in many parts of the world. Particularly serious threats to society and the environment include receding glaciers due to high temperatures and precipitation, increased glacial lake outburst floods (GLOFs), more frequent and widespread forest fires, and larger, more prolonged, and more damaging floods. This session focused on innovative approaches to monitoring and responding to GLOFs, forest fires, and floods.

Past efforts in weather-related disaster risk assessment and forecasting, as well as analytical methods and forecasting models using innovative technologies such as satellite observations,

remote sensing, artificial intelligence (AI), and machine learning were also mentioned and evaluated, and opinions were exchanged on potential future applications.

Prof. Abdulhamid Kayumov discussed glacier degradation and the efforts to catalog and register glacial data, which is a global concern. He explained that his organization collaborates with various groups to collect and monitor glacial data by utilization of methodologies such as remote sensing, the use of unmanned aerial vehicles (UAVs), and isotopic analysis. He emphasized the practical significance of glaciers in relation to disasters, particularly flooding and infrastructure damage. Reliable data analysis is crucial for disaster risk reduction efforts, and their work aims to provide essential information for addressing these challenges.

Mr Serik Aubakirov, the Director of the Centre for Emergency Situations and Disaster Risk Reduction (CESDRR) for Central Asia and Caucasus discussed the organization's activities and achievements. A significant priority for CESDRR is the establishment of regional early warning systems. To enhance the safety of citizens, they have collaborated with UNICEF to conduct training exercises involving the use of UAVs (drones). These drones are utilized for monitoring flood and mudflow-prone areas, identifying and locating wildfires, and assisting in search and rescue missions, particularly in mountainous regions. In mapping and data collection, CESDRR utilizes open-source data, emphasizing their commitment to using readily available information for disaster risk management.

Dr Mandira Singh Shrestha, a Senior Water Resources Specialist at the International Centre for Integrated Mountain Development (ICIMOD), discussed the critical challenges and initiatives related to disaster risk reduction in the Hindu Kush Himalayan (HKH) region, which spans eight countries. The HKH region is facing a climate crisis with rising temperatures leading to the increasing risks to glacial run-offs and more than 400 Glacial Lakes Outburst Floods (GLOFs). ICIMOD is working to understand the risks and improve disaster risk reduction efforts through research, inventory monitoring, and the establishment of early warning systems. Mitigation measures include constructing dams, reducing the size of glacial lakes, and lowering their water levels. Emphasis is also placed on public awareness and cooperation among governments and intergovernmental organizations. Aligning policies with the Sendai Framework is crucial to ensuring the safety and resilience of communities in the region.

Dr Changje Kwak, research scientist at the National Disaster Management Research Institute (NDMI) in the Republic of Korea, presented on the challenges and initiatives related to managing floods in Korea, with a focus on the case of the metropolitan city of Ulsan. Korea has experienced continuous flooding, with one of the key challenges being the integration and management of digital information. Effective flood control requires the integration of various sources of information, allowing for better prediction and response to flood-risk areas. Dr Kwak discussed the flood risk assessment, which is based on five factors: buildings, land cover, population, rainfall, and water level. These factors are integrated into a risk assessment that employs scenarios and risk matrices.

Ms Firuza Tursunzoda, Head of the National Disaster Risk Management Project in Tajikistan, provided an overview of the National Disaster Risk Management Project (NDRMP). The primary goal of this project is to enhance Tajikistan's resilience to natural hazards and reduce the socioeconomic impact of such hazards. One of the key focuses of the NDRMP is to

improve the monitoring and early warning system for Sarez Lake and the Usio Dam. The potential risks of the internal failure of the dam and the overtopping were expected. These risks could be caused by rising water levels in the lake, which could result from natural events like landslides into the lake or glacial lake outbursts. Studies and assessments were conducted to evaluate the risks, and the findings indicated that the risk of dam failure was very low. This analysis was based on the use of InSAR (Interferometric Synthetic Aperture Radar) to assess slide areas. A four-component early warning system (remote satellite data, forecast information, on-site monitoring, and captures alerts and issues warnings) for Sarez Lake is in place, providing real-time data analysis, and has been fully operational for over two years. Its ongoing development and capacity strengthening ensure that real-time hydromel data remains available to enhance disaster risk management efforts in the region.

Mr Najib Yaminov, Head of Emergency Situations Department at the Habitat Branch of the Aga Khan Agency in Tajikistan, presented several key initiatives aimed at enhancing disaster preparedness and response in the region, particularly regarding glacial lake outburst hazards. These initiatives include monitoring glacial lakes, conducting annual helicopter analyses, building emergency shelters, establishing multipurpose playgrounds with essential supplies, and conducting community exercises. Mr Najib's initiatives reflect Tajikistan's proactive approach to addressing the unique challenges associated with glacial lake outburst hazards and its commitment to enhancing disaster risk reduction and community resilience. These efforts aim to safeguard local populations and mitigate the impact of disasters.

WRAP-UP AND CLOSING SESSION

In the beginning of the Wrap-up and Closing session, Mr Rustam Nazarzoda, Chairman of the Committee on Emergency Situations and Civil Defense under the Government of the Republic of Tajikistan conducted the DRR Award Ceremony of Tajikistan.

Mr SASAHARA Akio, Executive Director, Asian Disaster Reduction Center, provided a summary of the ACDR 2023 conference and expressed gratitude to Tajikistan for hosting the event. He highlighted key points discussed during the roundtable and technical sessions:

1. Sendai Framework and Sub-Regional Cooperation: Member countries discussed the challenges and opportunities related to the Sendai Framework. They also emphasized the importance of sub-regional cooperation, including the roles of ASEAN (Association of Southeast Asian Nations) and the CESDRR (Central Asia and South Caucasus Disaster Risk Reduction Platform) in addressing complex and transboundary disaster risks, such as earthquakes, floods, and typhoons. This cooperation involves partnership building and joint projects in areas like hazard and risk mapping and assessment.
2. Innovative Solutions: The technical sessions at the conference highlighted several innovative solutions. These included the use of GIS technologies, software packages employing probabilistic calculation methods (e.g., CRISIS-2015), an eight-step approach to earthquake disaster risk reduction (as adopted in Kyrgyz Republic), international standards (ISO), smart disaster risk reduction infrastructure, and disaster information sharing. The adoption of these approaches contributes to improving disaster preparedness and risk reduction.
3. Children Involvement: The efforts of the Tajikistan committee in implementing earthquake preparedness among children in schools and kindergartens, such as through regular drills, were recognized as a significant initiative.

4. Glacier and GLOF Monitoring: Several innovative approaches and methods were discussed, including the use of expeditionary work, remote sensing, drones, and isotopic techniques to monitor glaciers, snow covers, and glacial lake outburst floods (GLOFs). Interactive maps and digital safety measures, space-based technologies for monitoring glacial lakes, and remote sensing for early warning of glacial outburst floods were also highlighted.
5. Digital Technology for Flood Management: The conference emphasized the use of digital technology for effective flood management, including the demonstration of real-time hydromet data availability using the open EUMETSAT satellite system for monitoring lakes and dams.
6. Hazard Assessment and Community Preparedness: The collaboration between the Aga Khan Agency and the Committee of Emergency Situations and Civil Defense in Tajikistan, particularly in monitoring glacial lakes and disaster management planning at the village level, was recognized as a successful approach to hazard assessment and community preparedness.

Dr OGAWA Yujiro, the Executive Secretary of the Asian Disaster Reduction Center (ADRC), acknowledged the efforts in providing information through the Global unique Disaster Identifier number (GLIDEnumber) and welcomed Fiji as the 32nd member country of the ADRC. Dr OGAWA noted the increased frequency of disasters worldwide and stressed the significance of learning from these events. He mentioned that the study visit organized by ADRC to visit the earthquake-affected sites in Türkiye was part of such learning. This program aimed to help strengthen disaster management and preparedness in the face of future disasters.

Mr Rustam Nazarzoda, the Chairman of the Committee on Emergency Situations and Civil Defense under the Government of the Republic of Tajikistan, emphasized the importance of knowing the necessary measures to be taken for earthquake and disaster risk reduction. He stressed the significance of sharing and gathering data among member countries.

– End –