ADRC Online DRR Seminar Series

28 September 2021 (Tue.)
16:00 - 17:30
[Japan Time, UTC+9]

Fourth Seminar

GLOF impact to the local economy and measures

Building Societies Resilient to the Intensifying Climate Crisis and Increasing Urban Vulnerability

Objectives

In order to support member countries in implementing the Sendai Framework for Disaster Risk Reduction (SFDRR) and the SDGs, and to contribute to building a safe, secure and livable society, ADRC in collaboration with other relevant agencies is organizing a series of DRR online seminar.
The fourth DRR seminar focus the increasing risk of Glacial Lake Outburst Floods (GLOF), and measures against GLOF.
Topics are as follows;
- Glacial lake and glacial lake outburst floods in the Hindu Kush Himalaya
- GLOF risk reduction in the Himalayas

Dr. Mandira Singh Shrestha

Programme Coordinator
Climate Services, Mountain Environment Regional Information System (MENRIS),
ICIMOD

Ms. Finu Shrestha

Remote Sensing and Geo-information Analyst
Geospatial Solutions,
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Register https://bit.ly/adrcseminar4

YouTube https://youtu.be/LJjofzAEH6Q

https://acdr.adrc.asia/home/2021Seminar

zoom

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Agenda

16：00 **Opening**

16：05 **Glacial lake and glacial lake outburst floods in the Hindu Kush Himalaya**
Ms. Finu Shrestha, Remote Sensing and Geo-information Analyst, Geospatial Solutions, ICIMOD

16：35 **GLOF risk reduction in the Himalayas**
Dr. Mandira Singh Shrestha, Programme Coordinator, Climate Services, Mountain Environment Regional Information System (MENRIS), ICIMOD

17：05 **Discussions**

17：25 **Closing**
Mr. NAKAGAWA Masaaki, Executive Director, Asian Disaster Reduction Center, Kobe, Japan

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Summary

Recognizing that sudden Glacial Lake Outburst Floods (GLOF) would cause enormous damage to settlements and infrastructure located downstream of Hindu Kush Himalaya (HKH) region, ADRC invited two experts from the International Centre for Integrated Mountain Development (ICIMOD) to share knowledge, experience, and programs about GLOF to the 88 participants of the 4th DRR Seminar series held on 28 September 2021.

At the opening, Mr. ARAKIDA Masaru (Director of Research Department at ADRC, and moderator of the session) mentioned three focused questions that would be covered in the discussions: Is the number of GLOF events increasing due to climate change? How does GLOF impact the local economy? What are the disaster risk reduction measures for GLOF?

Giving an overview of GLOF and the efforts to understand its risks, Ms. Finu Shrestha (Analyst, Remote Sensing and Geo-information Geospatial Solutions, ICIMOD) presented some research findings using remote sensing techniques: (1) based on its 2018 inventory, ICIMOD recorded a total of 25,614 glacial lakes in five major river basins of HKH; (2) of this total, 47 are potentially dangerous glacial lakes (PDGLs) that are situated in the three major river basins of Nepal; (3) mass movement and glacier calving are the main factors for dam failure in the Eastern and Central Himalaya; (4) temperature and extreme rainfall cause GLOF in the region; and (5) the frequency distribution of GLOF events in the last 4 decades varies every decade, making it difficult to predict its occurrence. Based on these findings, Ms. Finu Shrestha indicated that, as a pre-disaster mitigation measure, it is essential to identify the potentially dangerous glacial lakes and do a regular monitoring either by remote sensing or by field investigation. If the lake is of high risk, installation of ground-based radar sensor to measure the water level close to the lake should be done along with the early warning system installed near the river valley to give timely warning signal to communities downstream.

In the next presentation, Dr. Mandira Singh Shrestha (Programme Coordinator, Climate Services, Mountain Environment Regional Information System, ICIMOD) explained why it is essential to develop a comprehensive risk reduction strategy for GLOF, which includes structural and non-structural measures. She began by citing recent examples of GLOF and its impacts, including: the June 2021 GLOF in Melamchi, Nepal; the July 2015 GLOF in Lemthang Tsho, Bhutan; and the May 2020 GLOF in Hunza Valley, Pakistan. Each of these events damaged bridges, roads, and settlements as well as impacted livelihoods and local economy. Based on the lessons from these GLOF experiences, Dr. Shrestha stressed the importance of integrating risk assessment, risk analysis, and risk mitigation in the risk reduction strategy. For instance, using Earth Observation for hazard assessment and monitoring could improve understanding of the risk of GLOF and inform appropriate structural (e.g., lowering of the lake level to reduce the threat of GLOFs like those

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implemented in Nepal and Bhutan) and non-structural (e.g., establishment of early warning systems and systematic monitoring of the lakes to provide timely warning to the infrastructure and the communities living downstream) measures. In responding to the question why GLOF cannot be predicted, Dr. Shrestha said that there are many dynamic factors that could trigger GLOF such as earthquake, avalanche, and global warming. Additionally, it is the high-altitude areas of the region that are highly vulnerable GLOF due to climate change and variability. So, while it is difficult to predict the occurrence of GLOF, systematic and continuous monitoring of mountainous environments could offer robust knowledge and could strengthen the capacity for early warning. In view of this, there is a growing need to integrate GLOF risk reduction strategies into national policies and programmes to save lives and property as well as build climate resilience.

Finally, Mr. NAKAGAWA Masaaki (Executive Director, ADRC) during his closing remarks mentioned that based on the recent IPCC report, the pace of climate change has been progressing faster than expected. This means that risks from climate-related hazards such as GLOF could be further intensified. Therefore, in addition to developing a comprehensive risk reduction strategy, it is important to reframe the disaster risk management (DRM) approach by focusing not just on single hazard at a time but multi-hazards. In other words, there is a need to review the entire DRM system vis-à-vis climate change projections.