

Risk Reduction of Glacial Lake Outburst Flood in Nepal and Bhutan Himalayas

Daisuke Higaki^{1*}, Toru Koike², Jiro Komori³, Go Sato⁴, Jun Umemura⁵

¹Hirosaki University, ²Chikyu System Kagaku Co. Ltd, ³Nagoya University, JICA expert,

⁴Teikyo-Heisei University, ⁵Nihon University

Risk reduction of Glacial Lake Outburst Flood (GLOF) is the crucial issue in water and erosion/sedimentation problems along the Himalayan rivers. We overview the risk assessment and mitigation measures against GLOF in Nepal and Bhutan Himalayas where various attempts started for last two decades .

Extreme erosion, deposition and sediment transport have been recorded along Bhote Koshi (River) during the GLOF originating from Dig Tsho (Lake) in Nepal (Vuichard and Zimmermann, 1987). Many shallow landslides caused by the GLOF in 1977 have been remaining without vegetation recovery along the torrent in Khumbu District, Nepal. Terrain consisting of glacial and fluvio-glacial deposits, fluvial terraces and deep-seated landslide bodies are susceptible to riverbank erosion. Debris flows also may occur along steep riverbeds.

Bajracharya, et al (2007) overviewed current status of the study on glacier, glacial lake, GLOF and its risk management in Nepal. JICA (2008) pointed out the importance of community-based disaster preparedness in Nepal.

Among the procedures of GLOF risk assessment, extraction of potentially dangerous lakes and investigation on possible breach processes of a moraine are initially important. While flood hazard zonation in the downstream areas, existing landslide dams, potentially hazardous landslides and bank erosion-susceptible sites may also be evaluated.

Mitigation measures against GLOF risk by hardware construction such as lake water drainage works still seem to be in the trial stage. Re-location of houses and bridges at high risks of GLOF and associated erosion/sedimentation phenomena or the measures to reduce the direct attack of sediment and log flow might be some of recommendable measures. Enhancement of disaster management capability of both government sectors and community is urgently required especially in Bhutan.

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